

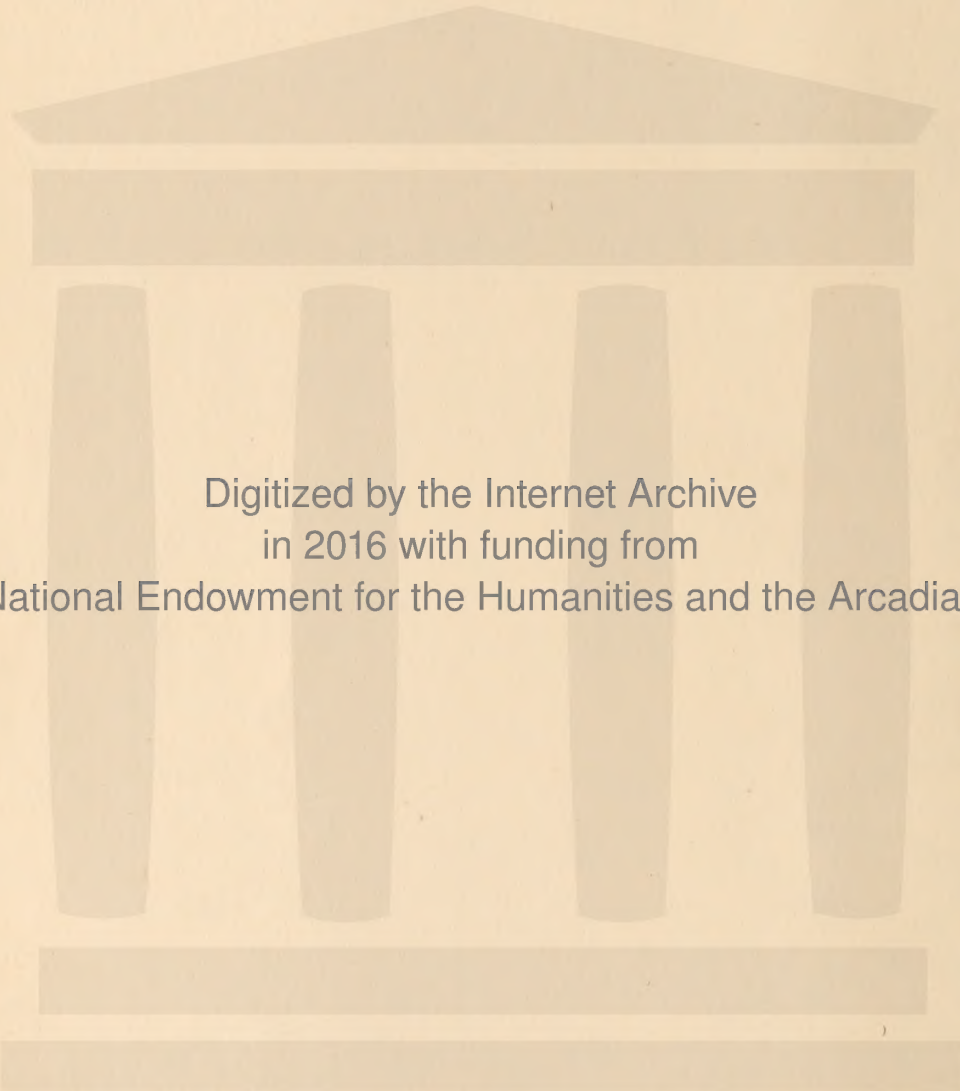
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I N D E X

TO

VOLUME XI

Southwestern Medicine

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Arranged Alphabetically by Title? *Subject*
of Articles

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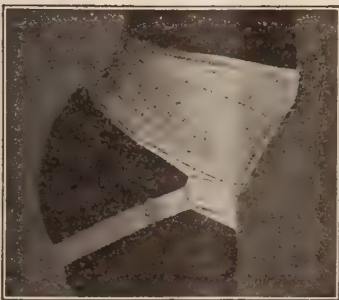
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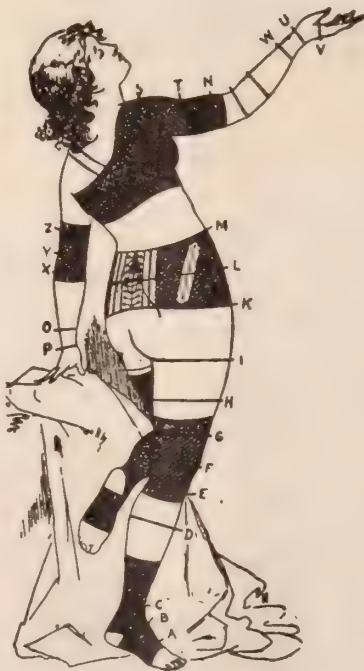
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INDUSTRIAL LEAD POISONING IN THE SMELTING PROCESS OF LEAD ORES

S. D. SVOPE, M. D.
American Refining & Smelting Co.,
CHIHUAHUA, MEXICO

In the Journal of Industrial Hygiene there have appeared, in the last two years, a number of articles on lead poisoning, or saturnism, in connection with the various industries. These articles have been principally confined to poisoning in the various industries where lead and some of its compounds enter into the process of manufacture of pottery, paints, rubber goods, and chemical lead combinations. I do not recall that any of these articles have gone deeply into the subject of lead poisoning incident to the two basic industries of the production of lead; viz., mining and smelting of this universally used metal.

Of course, it is generally understood that lead enters the human system by three sources: the alimentary canal, in food, inhaled dust, and precipitated fumes; the tegumentary system, by reabsorbed sudoriferous solutions, and through the respiratory system in inspired dust and sublimated gases.

With the exception of house painting, mining and smelting, very few occupations produce lead poisoning through all three of these avenues of entrance. In house painting the respiratory tract is invaded only during the sanding down process, and then the atmosphere is comparatively clear and the dust particles heavy enough to gravitate quickly to the floors or ground. In the mining of dry lead ores, notably sand carbonates in cavernous deposits, and in the reduction of lead ores to bullion form, the workman, in certain parts of the industry, is bathed in an atmosphere impregnated with lead and absorbs, swallows, and breathes more or less of the metal in powdered and gaseous form constantly during his working hours.

The treatment of such cases naturally resolves itself into two procedures: prevention, and cure.

The first is comparatively easy from a theoretical standpoint but exceedingly difficult, in the smelting and mining processes, from a practical view. The wearing of a proper respirator and careful body cleanliness would settle the question.

The constant wearing of respirators is attended with so much objection that the procedure is very difficult to maintain, even with old laborers who have gone through the throes of a three-day attack of lead colic, with its attendant misery. "Respirators are hot; they irritate the skin; they are dirty, and they don't do any good," are among the excuses of those who should wear them all, or part, of the time they are at work in lead.

Bodily cleanliness among the laborers in the great arid southwest is a consideration foreign to the mental attitude of a very large per cent of the laboring population. Some of them maintain the habit of bathing on St. John the Baptist's Day, which, luckily, comes on the twenty-fourth of June. In a country where water is scarce and the supply often limited, even for drinking, body cleanliness is difficult to maintain, even if there were not hereditary objection. The laborers wear the same clothing twenty-four hours a day, seven days of the week, and frequently, apparently, until the garments drop off their reeking bodies. Their food is eaten, generally, with unwashed fingers, without the aid of knife, fork, or spoon. That they do not absorb more lead is probably solely due to the active laxative effect of the ingestion of large quantities of chile—the native pepper. The habits of some of these people, accumulated through centuries of heredity, are about as easy to change as the leopard's spots. It will require several generations of evolutionary change to produce an ideal condition for proper prophylaxis. As in

other things, so will eternal vigilance bring success here.

Elimination and restoration of function constitute our curative procedures. Two distinctive elements interfere with these procedures: faulty metabolism and permanent physical changes.

Under faulty metabolism, we have to contend with poor food, alcoholism, and constipation. Under permanent physical changes: hepatic derangement, with probably intercellular deposit of the metal; deposit in bones; and changes in cerebral, glandular, and sympathetic nervous system, with the consequent anemia mental attitudes, effects on progeny, and local paralysis.

Of the changes in the central nervous system we have only subjective evidence, but the spinal cord and local nerve trunks give us sufficient objective evidence of their involvement. In the absence of post-mortem possibilities and competent laboratory investigations, the handling of the nerve cases is rather a haphazard procedure. In my opinion, when we have a nerve block in one of the trunk lines, there is very little prospect of permanent restoration, and the best treatment is to get the sufferer out of any lead environment, eliminate as far as possible the already accumulated lead in the system and recommend a complete change in occupation. Here we have to contend with the difficulty of doing without the services of a skilled laborer, which it has required many years to develop and who knows no other means of acquiring a livelihood.

These are some of the problems presented to a physician in charge of the largest lead smelting plant in the world, where eleven hundred men are employed regularly, ninety-five per cent of whom are natives of Mexico, largely drawn from the poorer laboring class. With seven furnaces running continuously, producing bullion at the rate of 600,000 pounds per day, our workmen are bathed in an atmosphere impregnated with lead fumes and are constantly covered with lead laden dust and precipitation. In 1923 there were 882 cases of lead poison reported in this institution.

When I took charge on July 1, 1924, there were thirty cases reported for the month of June and 137 for the year to date. My predecessor had cleaned up considerably before turning over the job to me. For the balance of the year 1924 we had only twenty-eight cases, bringing up the year to 165 cases. In 1925 we got along with twenty-nine cases, and for the first half of 1926

we have had but six cases to report. It would seem that we have reached a day of fair weather but there is the constant muttering of distant thunder, and small dark clouds of approaching storm are constantly seen hovering about the leaden horizon.

In July, 1924, I began examining all the men working about the furnaces for indication of lead poisoning, and found in each of the three shifts, from ten to fifteen who showed signs of lead. A survey at this time showed that there were forty-five workmen employed in the plant, who had suffered from lead poisoning three times or more. In July we established a prophylactic station at the furnaces and installed therein a Clague Electric Treatment Unit. This station was put in charge of a native workman who had had some little training in the local company hospital and he was given an unlimited supply of magnesium sulphate, while I visited him daily for moral support and instruction. Each laborer who showed symptoms of lead poisoning was given a half hour seance with the Clague each day and unless he could prove a mighty good alibi, he was given about two ounces of saturated solution of magnesium sulphate. The results have already been shown.

We found three sources of lead poisoning in the smelter: the bucking-room in sampling mill department furnished a few, the D & L roasters a few, and the furnaces the balance.

When we get a real case of lead colic, we take the man entirely out of the lead, give him the Clague baths for twenty-six days, sufficient salts to insure comparatively little reabsorption and a Q. S. & I. tonic. Some of our bad cases cleared up in the early stages, are free from symptoms now, and are performing efficient service. In the chronic cases that show no other symptoms, objective or subjective, than the local paralysis, we give high frequency electric stimulation and massage which temporarily relieve some of the symptoms, and when they again become exaggerated, the treatment is repeated. These cases are generally in old and skilled laborers and they can be given a place to work where the probability of accumulating more lead in their system is reduced to the minimum.

We have public hot and cold shower baths and encourage daily bathing, though the encouragement is frequently attended with discouraging results. We preach and pray for sobriety and personal hygiene and practical sanitation, but are constantly haunted by the thoughts that we must be wicked.

The Evaluation of Surgical Risks from the Standpoint of the General Practitioner

H. R. CARSON, M. D.
PHOENIX, ARIZONA

INTRODUCTION

Please allow me to express my appreciation to the surgeons of Phoenix for the wonderful support accorded the speaker in physco and gas anesthesia work. This support has enabled me to give more anesthetics, which increased experience, I trust, has improved my efficiency in anesthesia to their patients. At least, it has enabled me to earn a sufficient income to have the means to attend congresses on Anesthesia of the Associated Anesthetists of the United States and Canada, where anesthesia problems are discussed; to visit prominent anesthetists in their own clinics and watch their work; to subscribe for Current Researches in Anesthesia and Analgesia—the bi-monthly published by the International Anesthesia Research Society; and to purchase the best in gas and anesthetic appliances. I am proud to be a member of the two before-mentioned associations—and to be known as an anesthetist.

Several years ago, a bust of Dr. Wm. T. G. Morton was placed in the New York University Hall of Fame, Dr. Morton receiving the same number of votes as Mark Twain. This honor was in recognition of the first public demonstration of surgery without pain, at Massachusetts General Hospital, October 13, 1846. Dr. Warren, the surgeon, remarked: "Gentlemen, this is no humbug." Dr. Bigelow said: "I have seen something today that will go around the world."

On March 30, 1912, the University of Pennsylvania unveiled a medallion to Dr. Crawford W. Long, and on March 30, 1925, Georgia unveiled, in Congressional Hall of Fame, a statue of Long as one of her two most distinguished citizens—a recognition of the first anesthetic, given March 30, 1842—eighty-three years ago—to James Venerable, of Jackson, Georgia. These are the only two doctors so honored and they belong to the very beginning of anesthesia.

This year the British Medical Society added a Section on Anesthesia, meeting at Nottingham, England, on July 20 to 23, with Sam Johnson of Toronto, president and F. H. McMechan of Avon Lake, Ohio, vice-president.

(The following remarks, down to "Discussion" are quoted from the address by Dr. F. H. McMechan, published in the Journal

of the Canadian Medical Association, 1925, XV. 1209-1217 and other journals):—

Even in this, the fourth era of surgery, the family doctor is still all too often called upon to answer the challenging jibe—"The operation was a success but the patient died!" Hence the necessity for some routine way in which the family doctor, for his own guidance and his professional advice to others, may determine a given patient's fitness for operation and more accurately forecast the probable result. The basic problem is really an evaluation of the patient's reserve vitality, which, after all, is the paramount factor in recovery.

SAFETY FIRST

In preventing needless deaths, the international Anaesthesia Research Society has established certain essentials of **safety-first** for its uniform anaesthesia record. These essentials are:—

- 1.—The determination of surgical risk before operation.
- 2.—Five-minute blood pressure guides, and protection during the entire operative period.
- 3.—Remedial therapy and after-care based on the degree of circulatory depression.

Classification of Risks.—A. H. Miller, of Providence, R. I., of the Anaesthesia Research Society Record Committee, has classified surgical risks and tabulated the comparative death rates in 1,000 unselected cases from the files of a large general hospital as follows:—

CHART I

A, B AND C RISKS—COMPARATIVE DEATH RATES.			
A. <i>Good Risks</i> —Patients free from organic disease, whose surgical condition is not likely to prove dangerous.			
Cases	734	Deaths	2 Death Rate 0.2%
B. <i>Fair Risks</i> —Patients suffering from organic disease, but whose surgical condition is not especially serious.			
Cases	179	Deaths	14 Death Rate 7.82%
C. <i>Poor Risks</i> —Patients whose surgical condition or organic disease (or both) is so serious or so far advanced as likely to result in fatality.			
Cases	87	Deaths	29 Death Rate 33.33%
Total of 1,000 Unselected Cases			
Cases	1,000	Deaths	45 Death Rate 4.5%

Read before the Arizona State Medical Association, held in Globe, Arizona, April 26 to 28, 1926; also before the Maricopa County Medical Society in Phoenix, Arizona.

These contrasting figures are quite striking and point the lesson that if a lot of explaining about unexpected deaths is to be avoided, patients must be very accurately classified and evaluated as to their surgical risk before operation.

KNOWN COMPLICATING FACTORS

In determining risk, certain known and complicating factors are usually available for evaluation. Thus as height and weight depart from insurance averages and as age lies in the extremes of life, the hazard increases proportionately. The operation to be done may be slight or extensive; easy or difficult; brief or prolonged; safe or dangerous; elective or emergency; and the risk varies accordingly. The patient may be otherwise in the best of health; or on the contrary may have organic disease, with a grave pathological condition, and the prospects of a successful operation and safe recovery are directly influenced by such complications. The operating team using all the resources of physiological surgery and anaesthesia will save more poor risk patients than will one of lesser calibre and cruder methods.

But apart from such general considerations, which are commonly known to the family doctor who refers the case, are there really definite indices by means of which surgical risk and reserve vitality may be more basically evaluated? I hope to show that there are such in relation to both the circulatory and respiratory functions.

DIAGNOSTIC AND PROGNOSTIC INDICES

Moots' Index for Operability.—The first of these important indices is Moots' index for operability, which is secured by dividing the diastolic pressure into the pulse pressure and thus securing the pressure ratio per cent, Chart II.

CHART II
MOOTS' INDEX FOR OPERABILITY

Pulse Pressure	Pressure Ratio per cent or
Diastolic Pressure	Index for Operability
40	75
50	20
50% (Normal)	75% 80 —25%

Moots' Rule.—If the pressure ratio is high or low there is reason to apprehend danger. If the pressure ratio lies between 25% and 75%, the case is probably operable; if outside these limits it is probably inoperable.

Pressure Ratio Per Cent	Comparative Death Rates	Index of Operability
75% plus	██████████	23% Prob. inoperable
60-75%	██████████	10% Prob. operable
40-60%	██████████	3% Safely operable
40-25%	██████████	10% Prob. operable
25% minus	██████████	23% Prob. inoperable

Any family doctor who takes blood pres-

ures, can determine this index for operability and evaluate a given patient's chances accordingly.

DEGREES OF CIRCULATORY DEPRESSION

However, what happens during an operation may invalidate any assurance of safety-first under Moots' index, and for this reason the Anaesthesia Research Society insists upon five-minute blood pressure guides and protection during the entire operative period and has established certain degrees of circulatory depression for the information of the surgical team. These are:—

1.—**Safe.**—Fifteen per cent increase in pulse rate without increase in blood pressures; or 10 per cent decrease in blood pressures without a decrease in pulse rate.

2.—**Dangerous.**—Twenty-five per cent increase in pulse rate plus 10 to 25 per cent decrease in blood pressures.

3.—**Shock.**—A pulse rate of 100 and rising with progressively falling blood pressures reaching a systolic of 80 mm. and a pulse pressure of 20 mm. or less.

If shock continues for thirty minutes or more during operation, without effective remedial measures, death is almost inevitable in twenty-four to seventy-two hours. This guide discloses the onset of shock at least twenty minutes before it is indicated in any other way, thus providing this available time period for safety-first measures.

In those of the 1,000 cases reviewed by Miller, that were in shock for thirty minutes or more, the mortality was 69.23 per cent, surely a striking prognostic warning.

THE NEWER SHOCK INDEX

Now is there some workaday index for forecasting shock before operation and for being prepared to combat its probable occurrence in connection with any given patient and surgical procedure? It would seem that Froes and Declairfayt have provided such an index; and the erythrocyte count and the haemoglobin percentage are the only additional data required, and these are usually readily secured by the family doctor for further evaluation after the patient reaches the hospital.

Froes has modified the Declairfayt quotient and extols the dependability of the newer shock index thus obtained. Froes multiplies the systolic pressure by 100, and divides the product by the haemoglobin percentage multiplied by the figure representing the hundred thousands of erythrocytes.

For instance, in a patient with a systolic pressure of 170 mm., erythrocytes 3,600,000 and haemoglobin 67 per cent the formula would be:—

$$\frac{170 \times 100}{36 \times 67} = \frac{2412}{17000} = 7 \text{ plus}$$

This numeral 7 seems to be the extreme limit for safety. With any numeral product above this figure, shock is almost inevitable.

Surely so simple and available an index is worthy of routine use in preparing for shock in advance and in an effort to reduce the excessive death rate that follows in its wake.

THE ENERGY INDEX

In evaluating reserve vitality from the circulatory viewpoint, we are all too prone to overlook the significance of the pulse rate and this leads us to a consideration of the energy index as an aid in determining operative risk. The energy index is the sum of the systolic and diastolic pressures times the pulse rate. (Chart III)

ENERGY INDEX

$$\text{Systolic} + \text{Diastolic} \times \text{Pulse Rate} = \text{Energy Index}$$

$$120 + 80 \times 72 = 14,500 \text{ mm. Hg. per minute}$$

Note—Numerals of thousands only used as Index.

Condition	Energy Index	Index of Operability
Increasing	0—6	Probably inoperable
Cardiac Weakness	6—12	Probably operable
Normal	12—18	Safely operable
Increasing	18—24	Probably operable
Circulatory Load..	24—30	Probably inoperable

Note.—In this index the systolic pressure and pulse rate show heart capacity; and the diastolic end resistance, in terms of mm. of Hg. energy expended for each minute.

Again, as presented graphically, it is evident that the energy index, in relation to

the condition of the patient and operability, is of great diagnostic and prognostic significance.

GROVER'S BLOOD PRESSURE KEY AND ITS INTERPRETATIONS

Perhaps it is already realized that the indices for surgical risk and operability, so far presented, bear a definite relationship to the circulatory evaluations which the family doctor makes in his daily practice and this becomes all the plainer when such relationships to diseased conditions and grave pathology are more closely investigated.

B. B. Grover, of Colorado Springs, has condensed years of clinical experience into a blood pressure key which presents rising and falling ranges of the systolic and diastolic pressures in relation to each other and various pulse rates as well as in connection with the conditions of disease or pathology which they suggest, (see Chart IV).

To make Grover's key of more practical value, and to visualize its interpretation and suggestions, his figures in each set of ranges have been worked out in detail, and the pressure ratio per cent (Moots' index for operability) and the energy index have been included. To appreciate the significance of these pertinent indices of evaluation it should be recalled that 40 to 60 per cent is the safely operable range for Moots' index and 12 to 18 per cent for the energy index. It will then be seen how conditions of disease and pathology place these indices in the probably operable or inoperable ranges, (see Chart V).

CHART IV.
BLOOD PRESSURE KEY (Grover)

60—90		92—100		112—140		142—190		192—280		DIASTOLIC
Copyrighted 1923 By B. B. Grover M. D.						50—70 4 72—86 4 88—120 5		50—70 4 70—86 4 88—120 5		
				72—86 13 88—120 1		50—70 2 72—86 9 88—120 5		50—70 4 72—86 4 88—120 5		
		72—86 6 88—120 7		Normal		50—70 10 72—86 10 88—120 14		50—70 10 72—86 10 88—120 14		
11		90—120 8		50—70 2		72—86 15 120—150 12		50—70 2		50-72
		50—70 11 90—120 8		60—80 3		15		15		

Pulse rates—50-70, 72-86, 88-120. Indicated conditions—1-15.

CHART V
BLOOD PRESSURE KEY (Grover)—RANGES AND INDICATIONS

	Systolic	Diastolic	Pulse Pressure	Ratio %	Pulse Rate	Energy Index
N	112—140	74—90	38—50	51—55	72—86	12—18
	Normal readings.					
1	112—140	90—100	22—30	24—27	88—120	18—30
	Poor Myocardium and Incipient Dilatation.					
2	112—140	50—72	62—68	125—94	50—70	8—15
	142—190	90—110	52—80	57—72	50—70	12—25
	192—280	50—72	142—208	284—275	50—70	18—31
	Overworked Heart and Incipient Hypertrophy.					
3	112—140	10—50	102—90	102—180	60—80	7—15
	Aortic Insufficiency.					
4	142—190	110—170	32—20	29—11	50—70	12—25
	142—190	110—170	32—20	29—11	72—86	18—31
	192—280	90—110	102—170	113—154	50—70	14—27
	192—280	90—110	102—170	113—154	72—86	20—33
	192—280	110—170	82—110	74—64	50—70	15—27
	192—280	110—170	82—110	74—64	72—86	22—34
	Intracranial Tension; Arteriosclerosis; Cardio-Vascular Disease; Readings before Apoplexy.					
5	142—190	90—110	52—80	57—72	88—120	19—36
	142—190	110—170	32—20	29—11	88—120	22—43
	192—280	90—110	102—170	113—154	88—120	22—46
	192—280	110—170	82—110	74—64	88—120	27—54
	Failing Myocardium; Cardio-Vascular-Renal Disease; Readings after Apoplexy.					
6	92—110	74—90	18—30	24—33	72—86	12—17
	Neuroses.					
7	92—110	74—90	18—30	24—33	88—120	15—24
	Cardiac Insufficiency; Tuberculosis; Infections.					
8	92—110	10—50	82—60	82—120	90—120	9—19
	92—110	50—72	42—38	84—152	90—120	13—22
	Blood Dyscrasias; Tuberculosis; Typhoid; Septic Endocarditis.					
9	142—190	90—110	52—80	56—72	72—86	17—26
	Cardio-Vascular Strain; Cardio-Vascular-Renal Disease, Incipient.					
10	142—190	74—90	68—100	92—111	50—70	11—20
	142—190	74—90	68—100	92—111	72—86	16—26
	192—280	74—90	118—190	140—211	50—70	13—16
	192—280	74—90	118—190	140—211	72—86	17—32
	Hyperpiesia; Neuritis; Worry; Overwork; Climacteric.					
11	60—90	10—50	50—40	500—80	72—86	5—12
	92—110	10—50	80—60	800—120	72—86	7—13
	Toxicosis; Incipient Cardiac Failure.					
12	142—190	50—72	92—118	184—163	120—150	23—39
	Toxic Thyroid Endocrine Dysfunction.					
13	113—140	90—110	22—30	24—27	72—86	15—22
	Kidney Dysfunction and Albuminuria.					
14	142—190	74—90	68—100	91—111	88—120	19—33
	192—280	74—90	118—190	159—211	88—120	23—44
	Nervous Hypertension.					
15	142—190	10—50	132—140	1320—280	72—86	11—21
	142—190	50—72	92—118	184—162	72—86	13—22
	192—280	10—50	182—230	1182—460	72—86	15—22
	When persisting points to heart failure.					

THE BREATH-HOLDING TEST

The reactions of the respiratory function are also of vital importance, for basically they gauge the acid-base balance of blood and tissue chemistry in terms of health, function, disease and pathology and thus become a means of evaluating operative risk in relation to reserve vitality.

The respiratory function has a paramount index—the breath-holding test, which may be made on any patient by any family doctor. Yandell Henderson gives the following directions for making the test:—

1. Sit quiet for five minutes.
2. Take a full, but not too deep breath.

3. Hold it with mouth and nostrils closed.

4.—Note time (breath is held) in seconds.

Roughly a breath-holding test of forty-five seconds or over indicates normal health. Candidates who could not hold their breath forty-five seconds were rejected as unfit for the French Aviation Service; and this is significant, as under anaesthesia and operation patients have to withstand many of the same bodily reactions as are endured in high flying.

That this test should be a delicate and an accurate gauge of blood and tissue chemistry is not surprising in the light of Haldane's dictum—"That a deficiency of one part by weight of ionized hydrogen in one-

billionth dilution of blood completely suspends the activity of the respiratory centre."

As the breath-holding test decreases we have the indications for (1) beginning alkalemia, acidemia (ketonemia, acetonemia), and aminemia (amino acids); (2) which become mild alkalosis, acidosis and aminosis; (3) and these conditions become grave and (4) hazardous as the breath-holding capacity becomes nil, (see Chart VI.)

The breath-holding test bears a parallel

relationship to the vital capacity. For clinical purposes the vital capacity in c. c. is usually 100 times the breath-holding test in seconds. Thus a normal test would predicate a minimum vital capacity of 3,500 c.c. in the average male and 3,000 c. c. in the female; whereas a test of ten to fifteen seconds would indicate a vital capacity of 1,500 c. c. or less.

Patients with cardiac disease can lead a normal life if their vital capacity is above 90 per cent; a vital capacity of 70 per cent

CHART VI
RESPIRATORY EVALUATION OF OPERATIVE RISKS

Breath Holding Seconds		Condition	Vital Capacity M. c. c. F.		Indication	Operative Risk	Resp. Rate Inc. Dec.		Pulse Rate Inc. Dec.		
50			3,500	3,000		Safely Operable	18	16	72	68	
45		Normal			Normal		Probably Operable	24	14	86	64
40		Alkalemia	3,000	2,500	Restricted Activity			Probably Inoperable			
	35	Acidemia									
		Aminemia	90%								
30		Mild	2,500	2,000		Probably Operable	30	12	100	60	
	25	Alkalosis			Dyspnoea		Probably Inoperable				
		Acidosis	70%					Hyperpnoea	Probably Inoperable		
		Aminosis									
20			2,000	1,500			36	10		114	56
	15	Grave			Beginning	Probably Inoperable					
10			1,500	1,000	Decompensation		Probably Inoperable	42	8	128	52
	5	Hazardous			Decompensation			Probably Inoperable			
			40%								
0			1,000	500			48		6	142	48

Note.—The Vital Capacity in c. c. is usually 100 times the Breath Holding Test in seconds.

CHART VII
EVALUATIONS OF PATIENTS FOR ORAL SURGERY (Jones)

No.	Condition	B. H. Secs.	Sys.	Dias.	P. P.	Ratio %	Pulse Rate	Energy Index	Haemoglobin %
1	Diabetes.....	16					108		80
2	Diabetes.....	35	(Operation for gangrene)						
	5+ % Sugar								
3	Goitre.....	10	142	95	47	49	110	26	70
4	Goitre.....	10	145	67	78	116	150	22	70
5	Goitre.....	25	123	82	41	50	112	23	70
6	Anaemia.....	15	152	74	78	100	96	20	60
7	Mit. Mur.....	14	182	62	120	195	110	27	70
8	Mit. Regurg.....	40	115	65	50	76	92	14	(Compensating)
9	Tuberculosis.....	12	98	78	20	258	110	18	
10	Tuberculosis.....	15	104	64	40	62	100	17	
11	Pus.....	20	120	62	58	93	104	19	
12	Sepsis.....	12	148	100	48	48	94	23	
13	Cellulitis.....	15	(Temp. 102.4°)				120		

means a restricted life and limited work; below 70 per cent dyspnoea comes on from moderate exertion and at 40 per cent dyspnoea is pronounced and decompensation is present or readily occurs.

It is also informative to check up the respiratory and pulse rate with the breath-holding test and vital capacity, remembering that either or both may be increased or decreased from normal and that operative risk lies in the different ranges as indicated.

The Breath-Holding Test in Dentistry.—

That this test is a valuable clinical guide may be seen in the data of W. I. Jones of Columbus, O., in which ten poor-risk dental and three poor-risk surgical patients were disclosed in the first fifty thus examined, (Chart VII.) Note the striking difference in the two diabetics (1 and 2); the latter with considerable sugar in the urine but a test of thirty-five seconds, indicating good renal permeability and fair surgical risk for amputation; the former showing a test

CHART VIII
RESULTS IN B AND C OPERATIVE RISKS (Ruth)

Risks	No.	Deaths	D. Rate	Av. D. Rate (1,000)
B	40	3	7.5%	7.82%
C	15	3	20.0%	33.3%
Age—Years	B. Risks	Deaths	C. Risks	Deaths
20—40	11		3	
40—60	15	1	5	1
60—80	14	2	7	2
Duration	C. Risks	Deaths	C. Risks	Deaths
Average	55+ mins.	70 mins.	57+ mins.	98 mins.
Shortest	13 mins.	80 mins.	10 mins.	100 mins.
Longest	115 mins.	90 mins.	145 mins.	145 mins.
B. H. Test Seconds	B. Risks	Deaths	C. Risks	Deaths
50—40	8			
40—30	6	1		
30—20	10	1	5	1
20—10	15	1	7	2
No Record	1		3	
P. Ratio %	B. Riskh	Deaths	C. Risks	Deaths
75+	10		8	1
60—75	10	3	4	1
40—60	20		3	1
25—40				
25—				
Energy Index	B. Risks	Deaths	C. Risks	Deaths
0—6				
6—12	13	1	2	
12—18	12		3	1
18—24	21	2	6	2
24+	4		4	

CHART VIII—Continued
RESULTS IN B AND C OPERATIVE RISKS (Ruth)
Cardiac Reactions

Sys	Dias	P. P.	P. Ratio % B.	P. Ratio % A.	P. R.	E. I. B.	E. I. A.	Remarks
N 120	80	40		50%	72	15		
R 3	2	1		1+	1½	½		
B 148	82	56	60	53	72	16	18	Myocard. Deg.
*146	84	62	73	100	82	19	24	Died Card. Fail.
142	94	48	60	52	88	21	14	Myocard. Deg.
124	80	44	55	44	108	22	23	Mit. Regurg.
124	80	44	55	27	84	17	19	Myocard. Deg.
C 210	96	104	118	91	84	26	26	My. Deg. Caf. Saline
168	92	76	82	28	80	21	18	My. Deg. Collapse
162	72	90	130	43	40	9	14	Heart Block
*148	90	58	64	41	92	22	15	My. Dg. 3rd day. Emb.
*118	66	52	79	45	76	13	20	My. Dg. D. 4th. day. Acidosis
*110	72	48	52	24	108	20	21	My. D. Jaun. ch. Neph. D. 2d day
144	54	90	166	290	60	10	25	Mit. Sten. and Regurg. Pt. Decomp.
176	100	76	76	48	130	36	29	B. M. R. 50+%
138	90	48	53	90	118	27	26	B. M. R. 50+%

of sixteen seconds indicating a grave anaesthetic risk, although walking into the dental clinic for an examination.

Note the three goitre cases (3, 4 and 5) and see how the test predicates the other reactions of a more searching examination to determine surgical risk and operability. French observers have recently noted that the average test in goitre patients is fif-

teen to eighteen seconds. Consider the three circulatory cases (6, 7 and 8) and contrast the mitral regurgitation patient, whose booming murmur seemingly could be heard across the room, with the more serious anaemic and the very grave mitral risk with an operative index of 195 per cent. This test again points the finger of warning. The tuberculosis cases (9 and 10)

were anything but "good-risk" patients for operation or anaesthesia and yet they had little or no appreciation of the gravity of their condition. It is also interesting to note the effects of pus, sepsis and cellulitis on the breath-holding capacity (11, 12 and 13).

The Breath-Holding Test in the Toxaemias of Pregnancy.—Very recently Fitz-Patrick, of Chicago, has reported on the results of the test in 871 obstetrical cases primiparae and multiparae of all ages, including the various complications found before and subsequent to pregnancy:—

1.—The average parturient woman has a test of twenty-five seconds.

2.—The shortest test (three seconds) was found in a primipara, forty-four years of age, weighing 180 pounds, who had a cardio-renal insufficiency, with general venous stasis, and who gave a history of "rose fever" in her younger life.

3.—The longest test (sixty-five seconds) was found in a primipara twenty-four years of age, who held the hurdling championship for girl athletics in her state.

4.—The average cardio-nephritic pregnant woman has a test of eleven seconds.

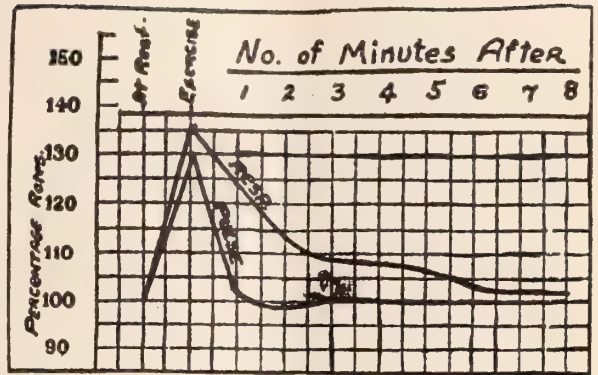
5.—The toxaemias of pregnancy due to faulty excretion showed a test of eighteen seconds, while those due to faulty secretion showed a test of fifteen seconds.

Fitz-Patrick concludes:—(1) That the average pregnant woman has a test of at least twenty-five seconds. Any reduction below this point demands an explanation; (2) The pregnant woman with an apnoeic pause of fifteen seconds has an organic lesion, is a poor surgical risk, and should be given an anaesthetic only by a professional anaesthetist, nitrous oxide-oxygen and ethylene-oxygen being the anaesthetics of choice, and the individual oxygen need being determined and fully supplied.

CORNELL TEST FOR DISCLOSING INCIPIENT NEPHRITICS

It should be recalled that all breathlessness is not necessarily of cardiac origin. Patients who become breathless after brief exertion should be given Cornell's test for the acidemia of incipient nephritis as a prelude to a more searching examination. Beaumont Cornell, of Brockville, Ont., has shown that in ninety-five out of 100 cases, in which undisclosed nephritis has been present under three years, there is a non-cardiac form of dyspnoea associated with mild exertion. Cornell's charting of the average respiratory and pulse rate response to exercise in 100 cases of early chronic nephritis is of very pertinent interest, (Chart VIII).

CHART IX



Following brief exercise the respiratory and the pulse rate both rise abruptly. The pulse rate comes back to normal almost at once; the respiratory rate only after seven or eight minutes. Cornell has found that:—

1.—Although not more than 20 per cent of patients complain of this dyspnoea, 95 per cent admit having it when questioned.

2.—This dyspnoea has no accompanying cyanosis and is usually relieved by four twenty-grain doses of sodium bicarbonate.

3.—Fifty per cent of cases note red, blue, green or prismatic colour change of the white electric bulb during this sort of dyspnoea.

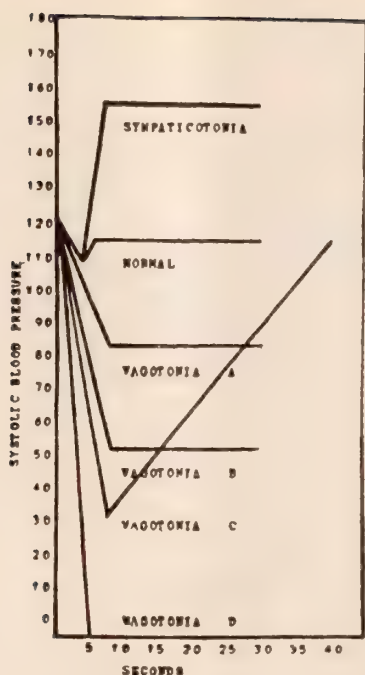
4.—The degree of dyspnoea coincides more closely with the acidemia of the respiratory centre than the phthalein output.

Unless such chronic nephritics are disclosed before operation they may account for some of the needless and preventable deaths from post-operative kidney dysfunction.

VAGOTONIA AND SYMPATHICOTONIA

H. D. McIntyre, of Cincinnati, O., is using a cardio-respiratory test for evaluating certain types of vagotonic and sympathicotonic patients in relation to therapy and operability. The McIntyre test is made by attaching the blood pressure apparatus to the arm and setting it to record the systolic pressure. The patient then takes a deep inspiration and holds the breath for thirty seconds, with the results in normal, sympathicotonic and vagotonic types of patients as indicated, (Chart IX), the blood pressure changes being noted at five-second intervals.

McIntyre has found in patients suffering from profound mental depression following epidemic, septic and toxic conditions that vagotonics showed serious drops in the systolic pressure during the thirty seconds interval of the breath holding. This vagotonic reaction is reversible by the use of atropin and thyroid and the test may



serve to disclose and evaluate those patients whose adrenalin reserve is not sufficient to withstand operation safely without preliminary atropin and thyroid therapy.

RESULTS IN B AND C OPERATIVE RISKS

Do the methods of evaluating reserve vitality and the indices for determining surgical risk and operability, as presented, hold good in practical use? Henry S. Ruth, of Philadelphia, has recently put them to a routine test and the results in several hundred consecutive operations speak for themselves.

The A risks are not charted or summarized as there were no deaths and practically all cases were so-called uneventful recoveries. The results in the B and C risks, however, would seem to support our contentions, (Chart X).

SUMMARY AND CONCLUSIONS

It is interesting to note in Ruth's results that the patients who died following operation, except in one instance, were in such classification under all the tests as to make the prognosis not only unfavorable but almost inevitably against recovery. The one patient challenging the other results died of uremia.

The cardiac cases with breath-holding tests approaching the normal withstood operation fairly well. Those whose breath-holding test was low either were among those who died or who had a very precarious recovery. From the charted cardiac reactions it may be noted that the pressure ratio per cent and energy index may either or both improve or become

worse during operation. A change in either is not necessarily very detrimental, but a change for the worse in both would seem to be disastrous."

DISCUSSION

The anesthetic is given to enable the surgeon to perform an operation.

The surgeon is legally responsible for the acts of the anesthetist, if the surgeon engages him. The surgeon and anesthetist are on the same footing, sharing equally the responsibility, if the anesthetist has been specially called by the patient or the practitioner.

If doctors and nurses were members of a labor union, a strike would be called if the health of the surgical team were jeopardized as we allow our health and efficiency to be undermined by breathing anesthetic vapors and gas. The operating rooms should have forced draft ventilation to carry off the ether and ethylene from the room, with a suction intake pipe at the mask or face piece, where the vapors and gas are being eliminated. Some German hospitals are so equipped.

The anesthetist is asked to add a toxic substance to the already diseased cell (B and C risks especially diseased), carry this diseased cell further toward death, and then return it to as near the starting point as possible—while the patient by fear, and the surgeon by trauma and hemorrhage, further depresses this diseased cell. Therefore, control your patient's fear by assurance and hypo (preferable morphine 1/6 to 1/4 with scopolamine 1/150), handle your tissues as gently as possible (especially the peritoneum, and add as little of the least toxic agent for as short a time as possible to perform the needed surgery. A variable anaesthesia—deep only when necessary—should be the aim to strive to obtain.

In infiltration anesthesia (and it should not be called local anesthesia when we inject a toxic substance into the body to be absorbed into the general circulation almost totally), using 0.5 to 1.0 per cent solution, and in inhalation anesthesia using nitrous oxide and oxygen and ethylene (preferably ethylene, because of its greater relaxation and greater oxygen allowances), we have, so far, the least toxic agents.

Early hours: When all the surgeons try to operate the first hour, the surgical department is overwhelmed. I believe the patient is better able to withstand surgical trauma and the surgeon is more fit later in the day.

If these evaluation tests are routinely used (especially the breath-holding test) some of the supposedly class A risks will

prove to be class B or C risks, recalling Dr. W. J. Jones', Columbus, results in his first cases tested—one very grave risk (breath-holding test sixteen seconds) walked into the clinic for extraction.

DISCUSSION

DR. W. V. WHITMORE, Tucson, Ariz. (opening):—I will not attempt to discuss Dr. Carson's excellent paper. While it may be true that I administered anesthetics earlier than any other man present, yet it does not necessarily follow that I am up-to-date in the modern methods of technic, or am at all competent to discuss this paper of Dr. Carson's.

Upon Dr. Carson's arrival in the city I waylaid him to get a copy of his paper, and when I informed him that I had never used ethylene, he gave me a laugh and told me to talk upon anything I wished to, which I shall do.

Since arriving at this session, I have been reminded of a little experience of mine—in fact it was my first anesthetic and there were several features, very interesting to me, connected with it. I happened to assist at the birth of our good friend Dr. Hal Rice. I had taken one year of medicine in 1885-1886 at New York City and had drifted into California, San Diego County, where my brother was living in 1887. A few weeks after my arrival there, a young doctor, with his wife, came into the place. There was no railroad there then and he had driven for over sixteen miles, which evidently hastened the trouble of the wife. In all, the town had about 400 people, counting children. There was a doctor there, but he was not available. This was before the days of telephone and other doctors were from eight to twenty miles away and out of immediate reach. Finally, the young doctor, who was Dr. N. J. Rice, saw me. As I say, I had taken one year of medicine then and, though I had not even had a lecture on obstetrics, and knew absolutely nothing about anesthetics, as a last resort he asked me to help him. The doctor had never had occasion to use forceps, before and, having to use them on his wife, naturally he had to have help. I gave the anesthetic—got through in some way, I don't know how—but everybody lived and we were all happy. While it may not be fitting for me to say it, yet I want you to know that this was one of my best cases. Dr. N. J. Rice refers to this day to the great moral support I was to him. Personally, I am quite proud of this, my first anesthetic, and proud that my first work in this line was connected with a prominent and able member of this Association. On the other hand, I suppose Dr. Hal Rice may claim the credit of having started me on my career as an anesthetist.

My experience with anesthetics has been quite the reverse of Dr. Carson's. I feel that I have gained something by my long experience, but I do not claim to be up-to-date like some of the younger men. I suppose I might be considered a fundamentalist.

I was much interested in the doctor's description of a pre-operative investigation. I might say that the surgeons for whom I am doing anesthetics are resorting more and more to local anesthesia, so that my services are less in demand than before. The description Dr. Carson gave of his records was an inspiration to me and I am very glad that is being done. I suppose, when I consider my primitive ways in which I have gotten along for thirty-five years, it is a wonder that any of my patients have lived, but they have, and I shall look forward year by year to further advancement.

DR. D. F. HARBRIDGE, Phoenix, Ariz.:—Had I known Dr. Carson was going to make this very favorable statement, so interesting to me, I would have brought over for your information, a picture of Crawford W. Long. As Dr. Carson has intimated, there has been quite a discussion as to the priority of claim. In 1910, the British Medical Association gave Crawford W. Long credit for the introduction of ether. Despite the stand taken in Boston, this recent event in Washington, it seems to me, absolutely vindicates Dr. Long's position.

The manner in which the use of ether was suggested to Dr. Long might be of interest to this assembly. He observed that, by the use of ether, the sense of exhilaration induced enlivened many of the members in the social groups he attended, so, in his particular community, Jefferson County, Georgia, there developed what were known as "ether frolics." During some of these frolics Long noted that some, who got more of the ether than others, received very hard knocks and bumps in their frolic without noticing any undue pain, so he proposed to a Mr. Venerable that he take ether and allow him to remove a wen from his head. It appears that after Dr. Long made his observation and explained it to his friends and operated Mr. Venerable, many were very ready to allow him to remove cysts and do small operations.

I think this deed of a doctor in a country place, single-handed, and in the face of very positive instructions which he had received while in training at the University of Pennsylvania, to the effect "that any man who received ether to the point of complete unconsciousness was at a dangerous point and would die," was a very daring thing and showed great nerve. Probably, had he dared such an undertaking at the present time, with our lawyers and courts in operation, he might have hesitated.

DR. WILLARD SMITH, Phoenix, Ariz.:—The origin of ether is merely an incidental point. If you can put together the various points made about the beginning of this as a substitute jag, and its successful introduction as such, I think we can console ourselves with the Volstead business.

I do want to say one thing, however, relative to the experienced anesthetist, as Dr. Whitmore brought out. Experience in anesthesia means a lot. The surgeon has a whole lot more time to attend to his own business if he knows he has an experienced anesthetist at the head of the table, but this new stuff I do not know very much about. They have kept bringing it in on me until I have gotten used to it and now do not pay very much attention to it, but I have to admit that Carson has taken a big worry off of my mind, as a considerable portion of my work is on extremely bad risk patients. Many of them are tuberculous patients and I have learned to respect very highly and place a great deal of confidence in Dr. Carson, and place at least fifty percent of the glory to him as anesthetist.

DR. CHARLES S. VIVIAN, Phoenix, Ariz.:—I want to speak of another class of cases, and that is prostate, particularly those cases of old fellows where there is a very narrow margin of safety. We have learned that it is wise to have Dr. Carson look such cases over and tell whether he can safely give a general anesthetic. We have had about a dozen prostate cases in the last two years, operated under general anesthetic, without mortality. That is not a very large series of cases, but it impressed me with the possibility of this method—determining the risk before operation. Ethylene has been the anesthetic that we use.

Dr. Carson says he likes to have the surgeon

fuss at him and that it helps to steady him. We have never noticed that there was occasion for this.

Dr. Carson has given ethylene for me in practically every urological condition except stones in the pelvis and kidneys. In taking stones out of the kidney, we have done numerous operations on the testicles and have used ethylene to cystoscope. I have absolutely no fault to find with the gas as a urological procedure.

The doctor spoke about taking the blood pressure and finding out the relative possibility of shock. A short time ago we had a very large hypernephroma, a case I reported in El Paso, and I believe that man got off the table and lived to go back to work simply because Dr. Carson was on the job and applied the proper methods. The tumor was very large, as large as a hat, and Carson's methods were very well worth while and saved a considerable amount of shock. I have come to the conclusion that if you have your anesthetist see your patient beforehand and ask his opinion, the rate of mortality would be less in surgical cases.

DR. HARRY R. CARSON, Phoenix, (closing):—Experience certainly helps in doing anything; so, also, does post-graduate clinic work and study, aid in producing better anesthesia. I feel very grateful to Dr. Willard Smith and Dr. Charles Vivian, for their kind remarks. I feel especially grateful to Dr. Smith, as he has, on occasion, referred to his anesthetist as "the tail of the dog," and unfeelingly remarked that "the tail was trying to wag the dog." The anesthetist is the pilot, steering the ship through the narrow straits, to harbor.

Ethylene is made from alcohol and from ether, or by the process of "liquifaction and fractionation" of natural gas from gas wells. The Pathological Laboratory has tested each of the three ethylenes mentioned above for carbon monoxide and finds them absolutely free.

Dr. Yandt, of the Bureau of Mines, approves this method of testing:

TEST FOR CARBON-MONOXIDE IN ETHYLENE

The cylinder to be tested is placed, preferably, in a small tank of water in such manner that the level of the water will come half way up the length of the cylinder. Ice and salt are added to the water until the temperature has been reduced somewhat below 32 degrees F.

After standing for five minutes, or until the temperature of the cylinder has assumed that of the brine, a 500 c. c. sample is drawn from the valve and collected in a flask by water displacement.

0.10 c. c. of fresh blood diluted to 2.00 c. c. is added to the flask. The latter is stoppered and rotated for five minutes, causing the solution to film itself around the sides of the flask. The solution is then poured into a small colorimetric flask or tube and tannic-pyrogallie acid added. After standing for 15 minutes an appreciable discoloration in the precipitate indicates the presence of carbon monoxide in the ethylene. (By discoloration is meant a red or pink shade.)

A set of colorimetric standards are desirable for the comparison. They are readily obtainable, but when not available a blank test may be run using air or any gas that is known to be carbon monoxide free. This, as previously implied, is essentially the test of the Bureau of Mines for the determination of minute quantities of carbon monoxide in air, except that it is qualitative only. To apply it quantitatively it is necessary to introduce an amount of oxygen into the ethylene comparable to that existing in the air or in the gas from which the quantitative standards were drawn.

The above test is easily applied and is more reliable than the cuprous chloride absorption method, keeping in mind that we are interested in detecting slight traces, and that a positive qualitative for carbon monoxide should disqualify the ethylene for anesthetic purposes regardless of what the quantitative may show.

A qualitative method that involves the bubbling of the gas through a test tube containing the diluted hemoglobin solution, provided the time of bubbling is limited and regardless of whether the rate of bubbling is slow or rapid, leads to the test showing the absence of carbon monoxide, whereas it may actually be present. This is due to the fact that the reaction between the carbon monoxide and the blood requires a definite length of time, which is not available during the interval the gas bubble is passing up through the solution.

In the test above outlined it is therefore specified that the blood solution and the sample of ethylene to be tested be brought in intimate contact for a definite and deliberate period of time by means of the flask, in the manner described.

Note. The sample from the cylinder may be taken without first liquifying the ethylene (by cooling in ice and salt), and the results will be reliable. If carbon monoxide is actually present, the cooling process merely serves to concentrate the impurity in the contents at the top of the cylinder and thereby causes a deeper shade of red to show up in the final color test. The cooling of the cylinder is therefore optional with the chemist and the test is sufficiently sensitive.

Ether is miscible with ethylene, more so than with nitrous oxide, to my mind. In the prostatic cases cited by Dr. Vivian, we occasionally do use a little ether for a short period, a variable level of anesthesia—deep only when necessary.

About shock: If the patient goes into third degree shock, the treatment is rapid intravenous saline solution—as large a needle as possible, for rapid flow—to raise the blood pressure back to within ten percent of normal, as quickly as possible. If there has been hemorrhage, a later blood transfusion should be given. Blood pressure readings should be taken every half hour, so that more saline can be given if necessary.

TECHNIC IN GALL-BLADDER REMOVAL

H. A. MILLER, M. D.
CLOVIS, N. M.

It is not my intention to claim a new procedure but to outline a technic that is a result of personal experience. Neither are we entering into a discussion as to what constitutes the indication for removal of a gall-bladder or to merely drain. We realize, however, that the general tendency at present is to remove, and we venture this opinion, that inspection of a gall-bladder with the naked eye does not always reveal massive pathology when its removal is followed by benefit to the patient. The phenolphthalein salts and x-ray promise

great aid in making better gall-bladder diagnoses in the future.

With this preface we will call attention to procedure. The approach is made with the usual incision, after which a sand bag or elevator of table is placed; the gall-bladder and ducts are inspected and palpated. If a decision is made for removal, the tip of the gall-bladder is grasped by angular forceps, the jaws of which are protected by rubber or gauze so as not to cut through the gall-bladder wall. The peritoneal coat is then incised on the under sur-

face of the bladder paralleling the long axis; this is carried about the fundus proximal to the attached forceps. Then gradually, by blunt dissection, free the bladder from its peritoneal coat, using the attached forceps as a tractor, pulling the bladder gently toward the wound. In the event of being unable to deliver the right lobe of the liver in the wound, the gradual freeing of the bladder with traction will give greater access to the field, any hemorrhage is easily controlled, and any aberrant or accessory hepatic ducts to the viscus, are recognized and disposed of. The approach to the cystic duct is easily recognized, as is also the cystic artery. The cystic duct is doubly clamped, the bladder removed, and a plain catgut tied about the proximal stump of the duct. A split tube with wick is carried down to the stump, and the peri-

toneal flaps dissected from the viscus are sewed over the drain, one of the first stitches being taken through the tube to hold it in place, the peritoneal folds being brought together over the tube as far toward the wound as possible. With the last stitch a fold of omentum is transfixed and brought up and sutured about the tube. The wound is then closed, leaving the drainage extra-peritoneal. This procedure will also keep taut, or prevent a sagging of, the free edge of the lesser peritoneal cavity, thus preventing lymphatic leaking or stasis in this area. The plain catgut suture on the duct usually absorbs in a few days, giving rise to drainage. If much inflammatory reaction and infiltration are present, we believe this is to be desired, as it tends to relieve lymphatic tension and stasis at the head of the pancreas.

FOREIGN BODIES IN THE EYE

J. B. GRAY, M. D.
EL PASO, TEXAS

The subject of "Foreign Bodies in the Eye," which was given me, will always have a place on programs whenever medical men meet. I am not a messenger of anything particularly new on the subject, but a recapitulation of a few of the most important points will refresh our memories and may prove advantageous. It is not my purpose to indulge in any criticism of the general practitioners, but to ask their support and extension of their field of usefulness, in keeping with their well-known scientific knowledge and professional responsibility, which is always active for the public welfare.

"Safety first" seems to be the watchword of the physicians of today and many of the laity. Most foreign bodies in the eye are preventable, and it is along this line of endeavor we would ask your hearty support and cooperation, as well as first aid, which will be mentioned later in this paper. Prevention of accidents, not alone to the eyes—a small part of the human economy—but to the entire body, is being carried on in recent years in all lines of commercial enterprises, manufacturing industries, railroads, and electric companies, as well as civic control of traffic in the larger cities, for the conservation of human life.

For convenience of description, foreign bodies in the eye may be appropriately classified as superficial and deep, this be-

ing deemed best from the fact of the differences in symptoms, treatment, and relative importance.

SUPERFICIAL FOREIGN BODIES

No injury to the eye from a foreign body, no matter how trivial, but what demands attention, as disastrous results often follow the slightest accidents of this character. The most common injuries to the eye, of this class, are inflicted by small particles of steel, iron, rust, scale of different composition, emery, glass, insects, lime, cinders, and many other materials needless to mention and familiar to you.

The symptoms are familiar to all, as most, if not all, have at some time experienced them, and they may be but briefly alluded to here. The symptoms ordinarily are pain in the eye, lachrymation, photophobia, conjunctival congestion, etc. The pain is usually severe and few of us need to be urged to seek relief. This does not hold good with craftsmen, mechanics, and laborers who most frequently meet with these accidents, many of whom carry a foreign body in the eye for days, and are forced to seek relief in the end.

Most foreign bodies will be found on the cornea, a small per cent in upper culdesac, still fewer in the lower, and the remainder in the eyeball. This last number, comparatively speaking from the number of accidents to the eyes, is very small. It is a matter of record, and in which my own ex-

perience coincides, that the left eye is the most frequently injured. It is injured in approximately sixty per cent of the cases. Some few foreign bodies will be found on or under the bulbar conjunctiva, but they are not common.

The disturbance of vision with superficial foreign bodies will be in proportion to the proximity of the foreign body to the center of the pupillary area. Foreign bodies on the cornea, though exceedingly small, when located directly in front of the pupil produce a marked disturbance of vision during their presence, and often for some time afterwards, depending on the size, depth, duration of presence, amount of infection and, most important, on the amount of corneal epithelium and corneal tissue destroyed in removal. This about covers the symptoms of the average uncomplicated case of superficial foreign body in the eye. The complications met with in superficial foreign bodies, are few and they do not occur often, if the case is seen early. There may be iritis, iridocyclitis, and infection of the corneal tissue surrounding the foreign body, or an infection following its removal, destruction of the entire cornea by spreading of the ulcerated area, and, occasionally, the loss of the eye from panophthalmitis.

DEEP FOREIGN BODIES

By this, be it understood, is meant such foreign bodies as penetrate the coats of the eye and become lodged in one of its chambers, walls, the lens or iris. It is this class of injuries to the eye by foreign bodies, which do the greatest damage and by which many eyes are lost. The greatest majority of foreign bodies of this class of injury are composed of iron or steel of varying size. Other foreign materials not so often met with in the eye are brass, copper, glass, stone, coal, splinters of wood, shot, and perhaps a few others less commonly encountered. Foreign bodies that enter the eyeball are usually large and strike the eye with much greater force than the smaller or superficial foreign bodies. Usually these injuries are caused by chipping with hammer and chisel on the different metals, and by dynamite explosions, etc.

The symptoms of a foreign body in the eyeball, when seen early, are often few and a little misleading. The patient comes to you with the statement of something having struck him in the eye, with a sharp stinging pain; a little water may have run out of the eye or a little blood was noticed at the time. The pain is not severe unless it be a large body, which tears the tissues. Primarily the pain is often not complained

of as much as in the superficial foreign bodies on the cornea or elsewhere. This, you readily see, is due to the fact that the foreign body has entered the eyeball and the pain of almost constant eyelid movement is eliminated. There may not be much disturbance of vision, but, as a rule, there is some, and this will vary from a slight blur to almost complete loss of sight. The immediate loss of vision, as a rule, will occur in those foreign body injuries where the foreign body enters the anterior segment of the eye, the cornea, iris, and lens having been injured. The patients will often tell you there is nothing in the eye or, at least, they do not think there is. Do not trust their opinion in the matter; it is usually wrong. Often they base their belief on the fact that they can still see. This is an erroneous conclusion and does not count much. When seen early, before inflammation has begun, the point of entrance of the foreign body offers little difficulty in locating. A very small, sharp, foreign body, such as steel or iron, may penetrate the sclera with but little evidence left of its having done so. Such bodies passing through the cornea and iris, will produce a hemorrhage in the anterior chamber which is quite easily seen. When the case is seen after the first 24 or 36 hours, the eye containing a foreign body will look quite different from one seen early. There will be all the symptoms of acute inflammation, a small contracted pupil as a rule, iritis, edematous lids, puffy conjunctiva, and great pain in the eye and temple of the side affected. Any foreign body in the eye is likely to produce infection. Iron and steel are the least likely; penetration of the eye by pieces of copper, splinters of wood, stone, produce serious injuries and are apt to be followed by infection. Dislocated lenses, a few of which I have encountered, become foreign bodies and, in spite of your resourcefulness, usually mean the loss of the eye. I shall not tax your patience by quoting from a long series of cases treated in the past twenty-five years, all of which would sound a great deal alike. It will suffice to say I have treated a goodly number, and we will pass to the treatment, in which we are most interested.

TREATMENT

The best treatment known to me for foreign bodies in the eye, is PREVENTION. It will not help the case in hand, but it may save him the next time and the loss of an eye, if he is fortunate enough with the first. It is befitting those of us who do eye work, to express our profound ap-

preciation to the general practitioners who turn over to us most of their eye cases. It is the general practitioner, usually, who first sees these eye injuries. Many of you are connected with industrial plants where the accidents occur, and often render first aid. We would appeal to you for your co-operation in instituting preventive measures and early aid work, and your help in bearing some of the responsibility. It will reflect credit to you as medical men, and untold benefit to the public. It is remarkable how much can be accomplished in this direction. In all hazardous occupations it will serve the purpose best to have some large placards tacked in most convenient places, warning of the dangers to the eyes at all times in the discharge of daily duties, and setting forth the best precautionary measures to use. Small typewritten slips, or cards, could easily be given laborers on entering the service, asking their cooperation in preventing accidents to the eyes. On these cards would be short pointed instructions as to where most eye accidents occur, and during what kind of work; namely, grinding, lathe work, chipping with hammer or chisel, etc. As goggles offer great protection, it would be so stated, and wearing of them be compulsory. Screens around a certain class of work are very essential and should constitute a part of the plant equipment. Workmen do not like goggles but as it is their interest you are protecting, emphasis will become necessary. A few appropriate "DON'TS" might be added to the card; such as, "Don't help put out your own eye when you get something in it: seek medical attention AT ONCE." "Don't let your anxious friends help you with dirty toothpicks, knife blades, chewing gum, etc.; you are likely to get an infection." Foremen should be instructed in the dangers incident to certain classes of work, and the reprehensible practice of dirty employes trying to do the doctor's work. It would be all right if they got by with it, but they don't in the long run, and somebody suffers the consequences. The general surgeon will tell you time is an element in his cancer cases and the time to get busy is the earliest possible moment. This holds true with foreign bodies in the eye. The danger of infection from superficial foreign bodies is practically nil, if given early and proper attention. The patient had much better suffer pain and inconvenience for a little while with a foreign body on the cornea or beneath the lid than to have anything introduced into the eye which is not sterile.

Superficial Foreign Bodies.—It has already been stated that foreign bodies should be extracted early. This applies to all foreign bodies. Men in general work often state they do not attempt any kind of eye work. This is assuming a very liberal attitude, but as they are often the first to see these cases, we would appeal to them to share a little of the responsibility and initiate proper measures for relief, especially if it is likely the case will be some time before the eye has proper attention. They are the ones to do this, as their knowledge of the prognosis of these foreign body injuries warrants the call for prompt action.

I shall not intrude upon your time with details of removal of superficial foreign bodies from the eye, as the procedure ordinarily seems so simple. Yet in years of practice I have seen men lose weeks from duty owing to bungling efforts to remove an apparently trivial foreign body. Foreign bodies on the cornea, the most frequently met with, should offer no difficulty. A good light, a sharp pointed sterile eye spud, a reasonably steady hand, and this little operation is finished with ease. Anesthesia is always indicated before attempting removal, with the single exception of foreign bodies under the lids, when it will not be indicated. I prefer two per cent butyn solution for this class of work. It has many advantages, chief among which is perfect anesthesia. It does not dilate the pupil, causing disturbance all day, (which is not necessary in cases seen early) and produces no drying of the cornea like cocain. After removing these foreign bodies from the cornea, examine the eye. Make it a fixed rule to do this; you will be rewarded at least with a sense of satisfaction at having done careful work. If a foreign body has remained on the cornea for as long as eight or ten hours, there will usually be found a slough, brown in color, where you remove the foreign body. Your work is not complete, neither is it well done, until this is also removed. It retards healing and will have to be reckoned with later, the eye usually remaining painful and inflamed.

This slough, the seat of most of these foreign bodies, is more difficult to remove than the original foreign body. It clings tightly to the cornea and it has to be entirely surrounded by your spud before it separates. A piece of cotton on a probe makes a very poor foreign body instrument. Too much tissue is touched, and epithelium destroyed which leaves the cornea more likely to infection and a large ulcer to han-

dle later, perhaps for weeks. You cannot do good work with this. I am cognizant of the fact that it is done and see cases following the procedure. Better not attempt it at all if a satisfactory instrument is not available and the foreign body imbedded in the cornea. After removal, a few drops of one of the silver salt solutions, 10 per cent neo-silvol, argyrol, 2 per cent mercurochrome, instilled in the eye will suffice in most cases. Recent cases seen early, and carefully attended, need not be bandaged, especially if you can see them the following day in the event the eye becomes irritable. Older cases, carrying a foreign body two or three days or a week, will need the same treatment with, likely, in addition, atropin and a bandage or eye patch dressing for the next 24 or 48 hours. There will be considerable ciliary congestion and often a beginning iritis. All of these corneal abrasions recover more quickly when protected. Foreign bodies under the bulbar conjunctiva are best removed by picking them up with fine-pointed forceps and clipping them off. It is almost impossible to remove them with other instruments. When, and when not, to use atropin in these cases is a matter of experience. Recent cases rarely need it, older cases usually do. Always if you have an iritis. If you suspect an iritis and the case is likely to be slow in recovering on account of considerable trauma, better dilate the pupil. Atropin to an eye at the proper time is like a splint to a broken bone.

Deep Foreign Bodies.—Here we meet with quite a different proposition from that just considered. Up to the time when I began doing eye work, in 1900, a foreign body within the eyeball was considered its doom, and it would have to be enucleated. It seemed almost imperative that this be done, and be done quickly, for fear of sympathetic ophthalmia in the fellow eye. There was not much argument about the question, and many eyes were lost. This was a subject on which physicians could agree. Since this date there has been a revolution in the treatment of these injuries from iron and steel. From about 1896 to 1900, when the x-ray and the giant magnet came into use, practical ophthalmology made a wonderful stride. Active development of the iron and steel industries about this time when so many eyes were being lost, may have inspired inventive genius to step in and save the situation so far as iron or steel bodies were concerned. I would not lead you to believe all eyes are being saved that meet with these

accidents; far from it, but the advancement has been so marked it emphasizes how utterly helpless we were.

It will be a repetition here to state that foreign bodies in the eyeball should be removed as early as possible. To my mind, this is very important for the reason these bodies become encysted, which renders their removal more difficult. Having used the giant magnet on these foreign body cases since 1903, it is my experience that once they become encysted it is almost impossible to remove them. I have had some failures, due likely to this cause. It is good practice to have an x-ray of the eye suspected of containing a foreign body, and have the body localized, if possible, before application of the magnet. It may have passed through the eye as they do at times, and your efforts would be fruitless. The often discussed problem of technic of magnet removal of foreign bodies, whether by the anterior or posterior route, is difficult to approach from any angle without emerging into controversial opinion. Take, for example, an ordinary case of iron or steel foreign body in the posterior part of the eyeball. It has entered through perforation of the cornea, injuring the lens, perhaps the iris. To my mind there is no better way to remove the foreign body than by bringing it forward with your magnet into the anterior chamber and either removing it through the original opening or making a new one if necessary. The lens is already traumatic and you will do it no harm. If your pupil is open, which it should be if possible, you will not have much trouble getting the body through it. Once in the anterior chamber there is no difficulty in removing it. Should it by chance become entangled in the iris, as a rule it can still be removed by a different angle of approach; or do an iridectomy, as this latter step will prove beneficial when you remove the lens. Those cases where the foreign body has penetrated the sclera, with the lens or iris uninjured, should always be reached through the posterior route. Approach the foreign body through the original opening, if you can do it, even to the extent of enlarging it. If it cannot be removed here, there is nothing serious about making a new opening in the sclera nearer the foreign body and extracting it. Some very able men will tell you never to enter the vitreous with the point of your magnet. You are often lost if you don't. I have done so, many times, as a last resort, with no particular harm noticeable. You must get the for-

foreign body or you will eventually enucleate. It is possible for some eyes to tolerate a foreign body for years, but the history is that they will eventually cause trouble. I see a patient once or twice a year who has in the nasal wall of his left eye a foreign body, which he has been carrying for twelve years. It looks like steel with the ophthalmoscope. He was injured in Omaha. Efforts to remove it with the magnet were fruitless. His vision is good. Magnets are not a cure-all, but a wonderful help in these desperate injuries. A certain per cent of these foreign bodies you can not get for various reasons. Traumatic cataract will require operation. Iritis accompanies these injuries and will need atten-

tion until the eye becomes quiet. Useful eyes are saved in about 50 per cent of the iron or steel foreign bodies. Some eyes are lost, even after removal, by iritis, iridocyclitis, or panophthalmitis. Other foreign bodies than those mentioned, unless favorably situated so that they may be grasped by forceps, usually mean destruction of the eye. Dislocated lens, the most common dislocation being posterior into the vitreous, is often accompanied by paralysis of the pupil, and the eye is lost by glaucoma or iridocyclitis. I have seen four or five such cases from nails hitting the eye sidewise. I have never had a case of sympathetic ophthalmia from a foreign body in the eye; likely, timely enucleation has saved me this sad experience.

INFLUENCE OF THE PERSONALITY AND ECONOMIC CONDITION OF THE PATIENT ON THE RESULTS OF TREATMENT

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This subject constitutes only one aspect of the social side of the practice of medicine, but is a very important one. Many patients think that, in order to get a good result in case of illness, all that is needed is for the doctor to make a correct diagnosis and advise correct treatment. This is not true, as there are other factors also, that determine success or failure. The following notes include the results of my experience in medical practice, and are also the experience of medical friends. They apply especially to chronic cases of digestive diseases requiring internal medical treatment, but about as well to most other lines of medical practice. They are seldom found in medical articles or text-books, but are well known to all physicians. Time does not permit taking up all aspects of this subject, or mentioning all experiences that occur in medical work. Many medical laymen do not understand the necessity of full cooperation with the physician; if they did appreciate it, the results would be greatly improved in many cases. Statistics are not available, and, in the very nature of the subject, cannot be collected.

The mental attitude of the patient on coming to the physician for examination and treatment, is of the utmost importance. He should be prepared to submit to any reasonable examination necessary to make

a correct diagnosis. Sometimes a physician has been very highly recommended to him, but on the other hand, he may come without knowing the physician or anything about his ability: this tends to make him doubt the necessity of details of examination and treatment, and adds unnecessary difficulties to the physician's work.

In most obscure cases it is very important to make a correct diagnosis, as this determines the character of the treatment. Sometimes instructions based on general principles will give good results in obscure cases without an accurate diagnosis having been made, but this is not the rule, and the chances of improvement and recovery are proportionately increased as these factors are correct. Incorrect treatment will not only fail to give a satisfactory result, but will permit a pathological condition to go unchecked that much longer, with gradual aggravation during that period. A good example of this is cancer of the stomach. This condition is insidious, and at first the symptoms are mild, not producing much discomfort or seriously affecting the general health. Very frequently the condition is not suspected nor the diagnosis made until it is no longer possible to completely remove the tumor at operation, which, of course, means that only a palliative operation can be done and that no hope for re-

covery can be given. The same applies to other diseases, but to varying degrees according to the nature and severity of the case.

A diagnosis cannot be made in obscure cases without careful, detailed work. This requires time—occasionally some days to complete the examination,—and varies with the character of the disease. In digestive cases five to ten days are often needed. Diseases of the eye, ear, nose, throat, heart, lungs, nervous system, genito-urinary and other organs of the body, are variable as far as this factor is concerned. The failure to understand this, sometimes leads patients to think that a diagnosis should be made in all cases by asking a few questions and making a hasty physical examination, without even removing the clothes, and that time spent beyond this is wasted. This occasionally has the result of preventing the patient from submitting to a proper examination, or from giving the full cooperation that is so much needed, or even causes a passive resistance. This is more or less natural, as few medical laymen have a good knowledge of anatomy, pathology, bacteriology, and diseases; their activities have been directed to other fields.

After the correct diagnosis is made and correct treatment advised, there are a number of factors that interfere with obtaining the best possible result. One of these is carelessness in obeying instructions, which leads to a failure to carry out essential details of treatment. Sometimes patients reject certain points of the advice given, which vary from valuable to essential. This is very annoying to the physician and interferes seriously with his handling of the case. Another of these factors is the inability on the part of the patient to carry out the treatment advised.

Some patients will persist for a week or a month, and then stop. Many conditions cannot be cured in this time, even when progressing perfectly satisfactorily. Sometimes considerable improvement occurs, and the patient stops treatment, as the principal symptoms are abated; after that the condition is apt to become aggravated. Then he returns for advice, and again stops too soon. Consequently this patient has very little chance of getting the result that he desires.

Many cases require continuous treatment for a long time; for months, or a year or more. Chronic cases have periods of aggravation, which are seldom preventable, even when the condition is progressing satisfactorily. As improvement occurs, these

periods of aggravation gradually become less frequent and less marked, and the periods of well-being are longer and more satisfactory. During such a set-back some patients get discouraged and stop treatment or change doctors, thus never getting the full benefit of expert advice. This factor alone is responsible for many curable cases failing to recover. Physicians refer to such patients with chronic diseases, who go from one doctor to another without persisting with any one long enough to get well, as "drifters."

I believe that, as a rule, the condition of the patient should be carefully explained to him, and reasons given for each point of treatment. The necessity of doing this has been gradually forced upon me. This conduces to full cooperation on the part of the patient, when otherwise frequently he would not persist. This is based on the importance of the time element in the treatment of chronic cases, which cannot be overestimated. I have repeatedly treated patients who have recovered on account of persisting over a long period of time, and also many others who should have recovered, but did not, solely because they did not persist.

The friends and relatives of a patient have an important influence on him with regard to how he carries out medical instructions. They generally render assistance in this respect. Sometimes some of them do not like the attending physician, or have a great deal of confidence in some other one, and advise him to make a change, when it is not necessary or desirable. The advice is always well-meaning, but they have not made the examination, do not understand pathology, diagnosis, and therapeutics, and sometimes seriously interfere with treatment. On the other hand, many patients become discouraged, and then friends and relatives render valuable assistance in having them persist.

The economic condition of the patient frequently has an important influence on how he carries out instructions. When dealing with a large number of individuals, statistics show that expenses of sickness bear a certain average proportion to the income, but there are numerous individual variations from this figure. Most individuals are well able to pay these expenses, but many, for various reasons, are not able to do so. As an instance of this we might mention a married man with four children; he is earning the average pay of a clerk, and he and all in his family are below normal physically, having frequent illnesses.

There is a steady expense of drugs and medical supplies. Occasionally a member of the family has to be sent to the hospital, while there needing the extra services of a trained nurse, or perhaps has to have an operation performed. Expenses of this kind are now much higher than they were twenty-five years ago. If such a man pays full rates for all services received, he quickly gets into debt and it is very difficult for him ever to place himself on the credit side of the ledger.

Following are some of the results that are observed as far as treatment is concerned. Some directions are not carried out on account of the expense. Many patients are sensitive, and do not always make office visits or call a physician when they should. Some acute conditions become rapidly very serious, and a delay of twelve or twenty-four hours in calling expert advice, is sometimes fatal. An example of this is acute gangrenous appendicitis. In such a case it is not rare for the patient to take an active cathartic, believing that he has only simple acute indigestion. This is disastrous, and even more injurious than the loss of time in calling a physician.

In chronic cases there is frequently the inclination to put off examination and treatment, and consult a physician only when the condition has become so serious that it greatly interferes with work. Also while the patient is under observation there is a tendency to diminish the number of visits, and thereby the thoroughness of treatment. This permits the disease to advance gradually in severity and become much more difficult to treat and cure, and sometimes converts a medical into a surgical condition.

Many men have positions which pay them for their services only when they work, and this frequently stimulates a man to do so when he should be receiving medical treatment. When he does not work his expenses and obligations go on as usual, and time that he loses for office visits or bed treatment, is a serious handicap. In certain cases of gastric and duodenal ulcer, gallstones, and amebic dysentery, the patient should give up his time for treatment, and not work until he has recovered or is much improved.

In this modern day it is not necessary for anyone to do without the proper medical and hospital care on account of expenses. There are many free clinics and hospitals, in fact, in the large cities these are over-done, and many people impose on

these institutions. Physicians are always willing to reduce their charges when necessary, and a tremendous amount of charity work is done by them in private practice.

I will now give several examples illustrating points already mentioned. The first will be that of a case of amebic colitis in two types of individuals. The first one is a well-to-do educated man. He can readily understand the nature of his condition and the necessity of persistence along correct lines, and has the means to obtain the best of treatment. He usually makes a complete recovery, as amebic colitis is now a curable disease.

The other man is a Mexican laborer, of inferior intelligence and poorly educated, married and with five children. He earns one or two dollars a day, and receives nothing on the days he does not work. He does hard physical labor under unsatisfactory conditions, and his diet is neither of good quality nor well prepared. When he has been relieved of the worst symptoms, and is restored to working ability, he generally stops treatment. The inevitable recurrence takes place, and then he returns, with the same result. The condition then gradually becomes aggravated and presents the pathology that usually develops in these cases. It is extremely difficult to cure a patient under these conditions.

A few notes on the pathology and biology of amebic colitis may make the above points a little clearer. The ameba *histolytica* causes ulceration of the colon. With aggravation of the condition the ulcers become more numerous and deeper, and the inflammatory induration becomes more marked. The amebae are imbedded in the ulcers. It is possible to completely relieve the patient of pain, diarrhea and other symptoms, even when there are ulcers and amebae still present. If treatment be stopped at this point, it will be only a question of time before recurrence takes place. This suggests the necessity of a very careful examination to prove, if possible, that there are no more amebae or ulcers present. This should be done in every case before the patient is pronounced cured.

There are all variations of personality and economic condition between the two classes of patients just mentioned.

The next example is that of peptic ulcer of the stomach or duodenum, occurring in the same two types of individuals. There is a decided tendency to healing and then recurrence in this condition, and it is very difficult to obtain a permanent cure. If

the ulcer does not remain healed, there is a gradual aggravation of the pain and digestive symptoms, with their effect on the nutrition and physical condition, and also a constant danger of hemorrhage and perforation. The well-to-do man frequently obtains a satisfactory result with medical treatment, and operation becomes advisable only when it is apparent that the ulcer will not heal, and the symptoms are serious enough to warrant it.

On the other hand, in the case of the Mexican laborer, it is not likely that the ulcer will heal and not recur. In his case the results of both medical and surgical measures are not as good as with the other man. After operation for peptic ulcer, in order to get the best result, it is advisable for the patient to receive careful medical treatment. The necessity for this is being recognized by experts more and more every year.

The next example is that of a patient with active pulmonary tuberculosis. This subject is of general interest to the residents of our southwestern region. Usually the margin between the ability of the patient to resist and that of the disease to destroy, is small. Experience has taught us that the result depends upon the patient persisting along good lines of treatment for a considerable period of time.

These patients should not have to work and earn their living. They should have sufficient funds to pay their expenses until an expert tells them that they have improved enough to work. When they are not so supplied with funds, it is a constant source of worry to them. This leads to the subject of the indigent consumptive in the southwest, which is a large one in itself, but time does not permit more than a reference to it.

I will mention a number of factors that have a direct influence on how these patients persist in treatment. Practically all

who present themselves have contracted the disease elsewhere and come to this region on account of our favorable climatic conditions. Most of them are alone and become very homesick. Few improve as rapidly as they thought they would, and they worry a good deal on this account. They are physically inactive, have practically nothing to do, and have too much time for unproductive thinking. Those who are inclined to worry frequently develop insomnia, become discontented, and desire to make a change, even when there is no real reason for doing so.

When a patient is improving more slowly than he wishes, or gradually losing ground, there is a strong tendency for him to consider making a change in either location or treatment. He wants to go to a warmer or a colder climate, to a lower or higher altitude, or make some radical alteration in the treatment used. In his personal contact with others, or in his reading, he receives advice varying from what is good to the utterly worthless. In his frame of mind he is easily influenced by the advice of others.

To counteract the factors just mentioned a patient should be given a good understanding of his condition, and should learn something, but not too much, about the disease. He is greatly in need of sympathy, friendship, and companionship of the right kind. When he has these, his treatment and recovery are greatly facilitated.

In conclusion, I wish to state that the practicing physician can use his knowledge and experience in making a careful diagnosis and advising treatment, but he acts in an advisory capacity only, and cannot enforce directions. Beyond that, in a given case, the result depends upon how the patient accepts advice and acts upon it. In this paper I have tried to bring to your attention a number of personal factors that have an important bearing on how the patient carries out the treatment prescribed.

THROMBO-ANGIITIS OBLITERANS

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The following case is so typically illustrative of a disease which has attracted increasing attention of recent years that it may be interesting to report it somewhat in detail.

J. H. S., an unoccupied man of sixty-seven, complained of Bright's disease and high blood pressure.

Family History. Father died of pneumonia. Mother died at seventy of unknown cause. Two

brothers were killed in battle, one died following a surgical operation and one of "asthma." Two sisters are living and well. One sister died of apoplexy and two of fevers of unknown nature. His wife is living and well and there are no children, nor have there been any pregnancies. There is no family history of tuberculosis, heart disease, diabetes or nervous diseases.

Personal History. Patient has never been robust. For the past twenty or thirty years his

weight has averaged 100 pounds. While in his twenties he was subject to facial neuralgia. No other headaches. At twelve he lost his right eye in an accident. There is no history of tinnitus, vertigo or otitis. There have been no nasal difficulties nor tonsillitis. He has had some chronic cough and expectoration for many years, and has had infrequent nocturnal attacks of asthma. There is no history of fever, weight losses, hemoptysis or pleurisy. He has never been breathless on exertion nor has he had palpitation or cardiac pain. Appetite and digestion have always been good. He is somewhat constipated. No history of jaundice or severe abdominal pain with nausea. For the past ten or twelve years he has, at times, been unable to empty his bladder and has catheterized himself. There has been no swelling of the feet prior to the present illness. He had typhoid at eighteen, pneumonia at eighteen and again at twenty. No history of rheumatism, scarlet fever, diphtheria, heart disease, skin, venereal or nervous diseases. There have been no operations or injuries.

Present Illness. For the past ten years patient has had pain in his feet and calves on walking. These pains have increased steadily in severity so that now he is unable to walk more than a block without stopping to rest, when the pain subsides and he is able to proceed again for a short distance. During this time he has been told on several occasions that he had a high blood pressure. In November, 1925, he grew much worse. His feet became very painful, began to swell, and would reddens when dependent. Shortly after this he developed an ulcer on the dorsum of the left foot which required four months to heal. Swelling and redness of the feet have persisted to date, though the swelling has varied in degree. Any slight abrasion of the feet heals very sluggishly.

Physical Examination. June 10, 1926. A poorly developed and ill-nourished man. Apart from the feet, skin and mucous membranes are clear. Bones and joints are negative. There is no superficial adenopathy. The right eye has been removed. The left moves properly, the pupil is round, central and reacts to light. Ears, nose and throat are clear. Tongue is clean and protruded evenly. Teeth are all artificial. Chest is of poor breadth and depth and expands equally. Tactile fremitus is equal. Both lungs are resonant. Breath sounds are vesicular and there are no rales before or after cough. The heart is not enlarged and there are no murmurs. Aortic second is accentuated. Pulse is rhythmic, regular, of large volume and increased tension. There is moderate fibrous thickening of the radicals. Blood pressure, 154-85. There are no abdominal distention, tenderness, fluid or masses. Liver and spleen are not palpable. Prostate is about one and one-half inches in width, rounded, smooth and firm. Superficial and deep reflexes are present and there are no abnormal reflexes. Both feet are red and slightly swollen. Swelling does not extend above the malleoli. There is a nail-head-sized scar on the dorsum of the left foot. The toe nails are thickened and deformed. Both feet are cold to the touch. The redness disappears on elevating the feet but reappears in a few minutes after placing in the dependent position. The right femoral artery is felt as a finger-thick cord and does not pulsate. The left is hard and thick but there is a faintly palpable pulsation. No pulsation is palpable in the popliteal, posterior tibial or dorsalis pedis on either side. The urine contains pus.

To summarize, we are dealing with a case of intermittent claudication of ten years' duration

which has recently become much worse. Since November, 1925, the feet have been swollen and red with a tendency to ulceration. Except for the left femoral, the arteries of the legs are pulseless cords. These are the characteristic findings of a severe case of thrombo-angiitis obliterans.

Our knowledge of this disease is largely due to the studies of Leo Buerger, who proposed the now generally accepted name in 1908, and who discusses the subject exhaustively in his work on the Circulatory Diseases of the Extremities.*

The disease is essentially an inflammation of the deep arteries and veins resulting in an occlusive thrombosis of the vessels of the extremities. Little is known of its etiology but 99 per cent of cases are found in male Jews between the ages of twenty and fifty. One case has been reported at the age of three. Syphilis, arteriosclerosis, nephritis, hypertension and toxic agents, except tobacco, have not been shown to be factors in its causation. Most cases are in heavy smokers and tobacco possibly increases the vulnerability of the blood vessels, as suggested years ago by Erb in his studies of intermittent claudication.

Thrombo-angiitis obliterans involves the legs much more often and extensively than it does the arms. There is an occlusive thrombosis, with organization and often canalization of the clot. In typical cases the vessels below the popliteal are, to a greater or less extent, occluded. Rarely the disease extends to the femorals and iliacs as in the case shown. There may be a periarteritis resulting in the binding together of vein, artery and nerve in a mass.

Usually the first complaint is of pain in the feet and legs, on walking, i. e., intermittent claudication. Coldness and numbness of the feet are noticed and especially in cold weather. After months or years, during which time the pain increases, evidence of nutritional disturbances appear. There are blebs, pustules or ulcerations, most often on the tips of the toes, following trivial injury or without apparent cause. The pain now becomes very severe. At, or before, this time it is noticed that the toes or anterior part of the foot, becomes reddened when in the dependent position, but blanches when raised to, or above, the horizontal. The foot is cold, it may be edematous, and the superficial vessels are pulseless. Some 20 per cent of these patients develop a migrating phlebitis of the superficial veins. Wide variations in these symptoms occur. Certain patients have pain alone, and this may be so severe as to require amputation even in the absence of gangrene. Trophic changes may

be the first symptom, and they may progress rapidly to gangrene.

The disease is a chronic one, ending in gangrene, though the development of the latter may be delayed for years. Remissions with entire or relative, but temporary, relief of symptoms occur, later to be followed with an exacerbation. Persistent edema is a sign of ill omen, presaging gangrene. Sudden death may follow pulmonary embolism.

According to Buerger, the points upon which we must depend for a clinical diagnosis of thrombo-angiitis obliterans are as follows: (1) Its occurrence among male Jews; (2) early involvement of the lower extremities; (3) early pain of intermittent claudication; (4) the presence of migrating thrombosis; (5) absence of pulsation in the vessels; (6) blanching of the part when elevated; (7) redness in the dependent position; (8) absence of simultaneous, symmetrical involvement; (9) the slow, chronic course, terminating in gangrene.

A consideration of these characteristics would lead us to think that confusion with any other disease is unlikely. As a matter of fact, Raynaud's disease is the chief condition in which such confusion might occur, and this is true particularly when thrombo-angiitis affects the upper extremities. The intermittent nature of the attacks of Raynaud's disease, with return to normal between attacks, the absence of pain during intermissions, and the striking absorption of bone, often with loss of the terminal phalanges, are the main points in the differentiation of these diseases. In Raynaud's disease the vascular changes of thrombo-angiitis are never found. The hard edema of the first stage of scleroderma and sclerodactylia, and the later

stage of bone atrophy, are not seen in thrombo-angiitis. The trophic disturbances of syringomyelia should be readily recognized as such with their concomitant neurological findings, atrophies, scoliosis and dissociated anesthesia.

The treatment of thrombo-angiitis is an unsatisfactory duty. The circulatory requirements of the part should be made as light as possible by its minimal use. Mechanical irritation and injury must be avoided as in a diabetic. There is no special treatment for the pain. Treatment directed toward lowering blood viscosity has been attempted, the administration of sodium citrate, of Ringer's solution in quantities of eight or ten quarts a day by the duodenal tube, and hypertonic salt solution intravenously, all have been used. These measures are of doubtful benefit. Buerger recommends a sort of vascular exercise by alternately lowering the part until it reddens, then raising it until blanching occurs, at the same time applying heat. This is kept up for an hour at a time for six or seven hours per day. He also believes intermittent compression of the main vessels to be of value, and mentions the use of heat and diathermy.

The average case eventually requires surgical treatment. The difficulty of securing primary union after amputation, in the presence of such extensive vascular damage, is apparent but Buerger reports sixty-five cases with excellent results in all, by the Gritti-Stokes supracondylar amputation of the thigh, which appears to be the operation of choice. The case in hand, with femoral occlusion, certainly raises additional obstacles.

*The Circulatory Diseases of the Extremities; by Leo Buerger; W. B. Saunders, 1924.

ARTHRITIS

1. CONCLUSIONS FROM REVIEW OF THE CURRENT LITERATURE
2. ABSTRACTS FROM RECENT LITERATURE

ORVILLE HARRY BROWN, M. D., Associate Editor.

CLASSIFICATIONS AND DIAGNOSIS OF CHRONIC ARTHRITIS

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CONCLUSIONS FROM REVIEW OF THE RECENT LITERATURE

Arthritis has numerous exciting causes, the most common of which are bacteria.

Various bacteria may be responsible for arthritis but the most common are the streptococci. Protozoa and other parasites are given as causative agents. Anaphylactic reactions also may be the exciting cause in arthritis.

The chief predisposing factor seems to be an inherent, probably hereditary, weakness, comparable to those conditions which predispose to premature grayness, baldness and other signs of senescence. In some cases the essential weakness is in one or more of the endocrines. Trauma may be the cause of arthritis being recognized, if not a help in starting it. Exposure, ex-

haustion, strains, etc., may contribute to the development of infection in or about joints.

Bacteria may develop to sufficient numbers to make a successful assault upon a joint by virtue of good breeding places in the body, designated as foci of infection. A thorough search for foci of infection should include at least the mouth and teeth; throat and tonsils; paranasal sinuses; middle ear and mastoid; cervix uteri; prostate and seminal vesicles; intestines; appendix; colon; rectum; kidney pelvis; urinary bladder; gall bladder, and chronic infection anywhere in the body.

The most comprehensive classification of arthritis appears to be that of Cecil and Archer. They have two broad divisions, to-wit; proliferative and degenerative. Under proliferative come infections, specific and deformans. Under degenerative come menopause, monarticular and senile. These terms are self explanatory except possibly the word infectious which includes simply those which can be definitely and individually established as coming from infection. This implies that many cases of arthritis while probably infectious in nature in the beginning are not easily proven so to be.

The pathology and associated pathology of arthritis are complex. Without presenting the histology of the joint changes, there are decreased circulation, decreased sugar, oxygen and other metabolism, and likely anemia, decreased gastric secretions and other systemic evidences of impaired health.

The diagnosis of arthritis consists in finding all of the possible sources of infection and toxemia. It would seem advisable to make it a rule to make sensitization tests on all cases.

The treatment consists, especially in the early stages, of a complete and thorough eradication of all foci of infection. There seems to be an implication in the lines of many of the writers that if this were done a large per cent of chronic cases would be prevented.

Immobilization should be done in acute stages.

Active and passive movements should be begun early.

Massage, diathermy, and every measure to help increase the circulation should be utilized.

A low carbohydrate diet is usually indicated.

The administration of nitrites seems to offer hope of bringing about benefit.

Vaccines are generally recommended.

Non-specific protein shock treatment is

recommended by a number of the writers.

When patients are found sensitized to food proteins those foods should be eliminated from the diet.

Deformities should be prevented; but if not prevented they should be corrected.

Iodides and thyroid extract are indicated in certain cases.

Reduction of weight is indicated in those who are too fleshy.

Low caloric diet is indicated in the obese.

All arthritics should be instructed in the nature of their malady, that much depends upon their philosophic attitude toward their troubles, and that co-operation with their physicians will do much to make life bearable.

Ortho-iodoxybenzoic acid may come into general use in time and promise a cure to a considerable per cent of those suffering from arthritis.

Synovectomy is indicated in all suppurating joints and in many joints not suppurating.

Sunshine, equitable climate, regular exercise, and proper clothing are advantageous.

Colonic irrigations are indicated in those cases which are harboring the etiologic organisms in the intestinal lumen.

Dilute hydrochloric acid is recommended by a number of writers as being almost a routine necessity.

General eliminative treatment is always good.

In cases with parasitic involvements, arsenamin, emetin and ipecac should be used.

Salicylates are probably always beneficial.

ABSTRACTS

Cecil and Archer (J. A. M. A., LXXXVII, p. 741) of the Cornell Clinic classify 612 cases of arthritis as proliferative and degenerative. Under proliferative come (1) infectious, 379; (2) specific, 18; (3) deformans, 17. Under degenerative are (4) menopause, 145; (5) monartricular, 20; (6) senile, 17. There were in the group four cases of gout, two of intermittent hydrops articularum and 10 cases were unclassified.

The infectious type is due to foci of infection, with exposure as a secondary role. Sixty-one per cent were from infected tonsils and 33 per cent from teeth. The sinuses, prostate, gall bladder, colon and cervix harbored the organisms in a few cases. The patient often dates his trouble from an acute infection or operation. The laboratory findings are mostly negative. In the foci of infection are found streptococci, either hemolytic or viridans. The blood sugar was a high normal in fourteen cases. The treatment consisted in removal of foci of infection, vaccines and physiotherapy. Favorable results were obtained in 82 per cent of those in whom the disease had not persisted over six months. The longer the disease had persisted the less was the benefit obtained from treatment. Those who had had the disease

five years or longer received little or no benefit.

In the eighteen cases of specific arthritis, eleven were from gonococci, five from tubercle bacilli and two from syphilis. The gonococcal cases were treated by the urologists, with vaccine therapy intravenously, and physiotherapy. The tuberculous arthritis was treated by the orthopedists.

Arthritis deformans, the authors say, presents in the early stages much the same appearance as does the infectious type. The average duration at time of admission to the clinic was seven years. Had these been seen early they would have been called infectious arthritis. In none of the 18 cases were foci of infection located. One of the patients was found sensitized to a large number of foods and removal of the food from the diet caused much improvement in the deformity. Removal of foci of infection and other treatment, vaccines, physiotherapy accomplishes little or no good.

Degenerative arthritis has lesions in the bones and cartilage with little involvement of the soft parts. This type is not painful. It is usually associated with sclerotic and degenerative changes and usually no focal infection, fever or signs of inflammation in the joint are found. Of the 182 cases of degenerative arthritis, 145 were in obese middle aged women, at or just after the menopause. The morbid changes consist of thinning cartilage, lipping and spur formation of the bone at the joint margins. Progress of the process is slow. The treatment consisted in reduction of weight by diet, the use of thyroid, iodides, etc. Physiotherapy gives much relief. Colonic irrigation is helpful in some cases. Vaccines have been ineffective. Ovarian extract has not been beneficial.

Degenerative monarticular arthritis was found in twenty patients, sixteen in hip and two each in shoulder and knee. It occurs in late middle life, more often in men than in women, usually in out door workers and from trauma. Focal infection is uncommon and when found, removal does no good. The author's treatment of this group has been chiefly iodides and physiotherapy. Vaccines were useless. Only six of sixteen treated derived any definite benefit.

There were seventeen cases of senile arthritis. The average age was 67. Fourteen were women. Foci of infection were rare; any joint of the body may be attacked; there are always many joints involved. The common sites are the spine, the distal phalangeal, and slightly less common in the knees, knuckles, feet and shoulder joints. The type of lesion is osteo-arthritis with new growth of bone and cartilage around the edges of the joints. True ankylosis does not occur. In eleven of the patients treated, two were definitely improved and five were slightly improved.

There were four cases of gout, all had or had had involvement in the great toes. Three had involvement of large joints. The fingers were affected in two cases. Only one showed tophi in ears. The average uric acid content in the blood was 6 mg. per 100 c.c. All improved. The treatment was, purin free diet, colchicin and cinchophen.

Intermittent hydrops articulorum was found in two men, age 40 and 48. The attacks came every ten days and lasted, one day, and two or three days respectively. In one a knee was affected and in the other both knees and one hip. Foci of infection were found and removed and improvement resulted.

The authors are convinced that there are the two distinct and fundamentally different clinical forms—the proliferative which is infectious and the degenerative which in their opinion is non-

infectious. The degenerative type they designate as stigma of age just as may be arteriosclerosis, nephritis, myocarditis, gray hair, etc.

In their conclusions the authors state proliferative arthritis cases should have focal infections removed and degenerative arthritis cases should have their metabolism accelerated with iodides, physiotherapy and low caloric diet.

Ralph Pemberton (J. A. M. A. LXXXVII, p. 1253) presents an interesting and original concept of some of the predisposing factors in the etiology of what he called heumatoid disability. Concerning the part played by bacteria he states "It is common knowledge that infections, especially focal in nature, have much to do with the causation of rheumatoid disability."

The author has found in sixty per cent of the cases of arthritis a lowered sugar metabolism. This is not diabetic in nature; it is due to changes in the circulation of the blood, and is concomitant with an increase of oxygen.

Pemberton's contention is that the decreased circulation and decreased metabolism is a vicious circle. As the arthritis develops disuse of the limb results and this in turn produces further circulatory changes. In the atrophy of disuse, it can be shown by x-ray that the bone of a leg which is not being used grows thinner. He and his co-workers found in patients with broken legs that the blood of the femoral veins of those legs showed an increased amount of sugar and oxygen. The fact that massage, heat, passive motion, etc., do so much for arthritis is further proof of circulatory deficiencies in arthritic limbs. On this basis he suggests that the nitrites should be beneficial in arthritis. In 60 per cent of the cases the sugar metabolism was raised and clinical benefit was obtained by the use of nitrites.

Another point which he emphasizes is that there is a ready transference from the blood to the synovial fluid of substances in the blood. After sugar is injected into the blood it is soon found in the synovial fluid in higher concentration than in the blood. The synovial fluid has, as one of its functions, the supplying of nutriment to the avascular portion of cartilage in the joint. If sugar can thus reach the joints readily it is assumed that toxins in the blood may also reach the joints readily.

N. Mutch (Medical Journal and Record, May 20, 1925, p. 625) analyzed two hundred cases of arthritis from the standpoint of the frequency of infection of the digestive tract. Gout, venereal, and tuberculous diseases and monarthritis were excluded. Active sepsis was present in the throat and nose of thirty-four percent of the two hundred cases, and around the teeth in fifty-two per cent; infective streptococci were recovered from the feces of eighty-four per cent. Fifteen per cent of his series developed arthritis years after all the teeth had been extracted. Sixteen per cent had total extractions during the course of arthritis and yet continued to have outbursts of arthritis with involvement of new joints. "Critical analysis of the throat histories shows a similar state of affairs." He writes: "The explanation of the failure in the treatment of these patients lies in the infection which was taking place from the lower zones in the bowel and which had been neglected after the cleansing of the mouth."

Lower alimentary tract infection include localized infections and diffuse infection. Among the localized infections are chronic appendicitis, cholecystitis, ulcerated hemorrhoids, diverticulitis, and stercoral ulcers. The diffuse infections may in-

volve the whole intestine and may be associated with circumscribed zones of infections. Most of the infecting organisms are streptococci, but four per cent are staphylococci.

Stagnation of the bowel contents seems to be the rule. Many of the patients had suffered with constipation for years before the development of arthritis. Three-fourths of the cases had redundant loops of pelvic colon and in two-thirds the transverse colon was double length. Many had secondary obstructions. Fifty per cent had a kink of the last coil of the ileum. Over thirty per cent had a most acute splenic flexure in erect position. Ninety per cent had a last kink in pelvic colon. It was common to find diseased appendices usually with adhesions so as to interfere with peristaltic results. Ptosis was frequent. Periods of diarrhea and mucus were common. Stasis and sepsis of the intestines may both be present without manifestations. Stasis is frequent notwithstanding daily evacuations of the bowels.

The author's scheme of treatment was to survey the entire alimentary canal. Accessible areas are treated surgically. Autogenous vaccines supplemented the surgical treatment, and did great good. Thyroid treatment was utilized in a considerable per cent of the cases.

Phillip S. Hench (Atlantic Medical Journal, April, 1925, p. 425) remarks that the countless cures for arthritis proves a lack of a specific cause. He reports upon 320 cases of polyarthritis or arthritis deformans which had been seen at the Mayo Clinic in the preceding two years. He says there are two main clinical types of chronic arthritis. The first is primarily infectious and involves many large joints and the proximal and middle joints of the fingers. It occurs in early adult and middle life. It is associated with vasomotor depression—commonly found in visceroptosis. This group is susceptible to anaphylactic and allergy phenomena. The second group may be partly infectious. It is characterized by localization in spine or knees or distal joints with Heberdeen's nodes. Those of this group usually have hypertension arteriosclerosis and other evidence of senescence.

In women it is likely to be associated with the menopause and obesity. The joint changes are hypertrophic. The differentiation between the two types is often difficult.

In addition to removal of all foci of infection, diathermy, baking, massage, exercise and correction and prevention of deformities, he says it is important to teach the arthritic the nature of his malady, the limitations of medicine in affording cure, and what he must or should do to help himself.

His final word is to search carefully for foci of infection and to remove them.

E. G. Crookshank (Medical Journal and Record, May 20, 1925, p. 615) stresses developmental and structural weaknesses as predisposing factors in the etiology of arthritis. Quoting:

"I would say definitely, both as a challenge and as a statement of experience, that the affected joints and correlated structures of persons who are the subjects of rheumatism and the rheumatoid affections are often markedly inferior, from the point of view of the morphologist, that we are justified in asserting a correlation between morphological inferiority and liability to certain joint affections. That is to say, persons who exhibit such inferiorities are more liable (*caeteris paribus*) than are others to break down in respect of the inferior parts, under stress."

Again he writes: "We note, in these cases, amyotonia, short incurved little fingers, small thumbs, and irregular digital formula, short, or ill formed last phalanges and irregular metacarpal arrangements."

And again: "Disease is a function of at least two variables, whether we call them soil and seed, organism and environment, or one hoss shay with Deacon as a load. We must study both variables, and appreciate both variables, never losing sight of the truth that it is the relation between them that constitutes the disease, and that is evidenced by the symptoms. What we call organic disease is the effect of the relation, and not the cause of it."

A. G. Young, Ph. D., and J. B. Youmans, M. D. (J. A. M. A., LXXXVII, p. 746) of the University of Michigan, report most remarkable results with the use of a new drug in the treatment of arthritis. They include 43 patients in their report. Four who had no crippling had marked improvement. Three with slight crippling had marked benefit. Of eleven with moderate crippling, six had marked, four moderate and one slight improvement.

The drug, which the authors used and which is not on the market, is o-iodoxybenzoic acid. Much experimental work has been done to determine the pharmacological action of the drug. A resume of this work as quoted by Young and Youmans is to the effect that the drug is antiseptic, and germicidal and that when it is injected into animals it stimulates leucocytosis, phagocytosis and production of hemolysins, agglutinis and antibodies in general, and that it diminishes the intensity of allergic reactions.

The method of treatment was to hospitalize all patients and to subject them to thorough clinical study. There was no accessory treatment except the occasional use of analgesics.

The drug was given intravenously. One gram of the free acid was placed in a beaker containing 50 c. c. of sterile water and ammonium hydroxide was added until the reaction was just alkaline to litmus. Then the amount was made up to 100 c. c. by addition of distilled water. The solution may be warmed and stirred but not boiled. The 100 c. c. are injected intravenously in not less than seven minutes. In cases with active infection reaction similar to protein reactions occur. The authors think these reactions are not non-specific protein reactions. The treatments are given bi-weekly for three or four weeks. This constitutes one course. Seventeen patients had two or more courses.

Pemberton, Cajori, and Crouter, (J. A. M. A. LXXXVII, p. 2148) say, "focal infection is often only the match to the priming, even where operative." Again they say: "The justifiable and sound conception that focal infection is a cause of arthritis has properly received wide acceptance." Their conclusion, however, seems to be that the theory of focal infection has had too much finality. In line with former work of Pemberton's the author gave patients, with delayed sugar removal from the blood, nitrites to open up smaller blood vessels and in turn to stimulate metabolic processes. They found that this caused an increased consumption of sugar and of oxygen and probably of other products. Their idea is that what happens to the sugar and to the oxygen is an index to what happens to other blood products. The author believes that the slow metabolism may be a cause rather than a result of the focal infection. A good per cent of the arthritic patients were benefited by the administration of nitrites.

Stauffer (Medical Jour. and Rec., Dec. 3, 1924, p. 542) found that a vast majority of arthritis cases have foci of infection. In two hundred cases two-thirds had diseased tonsils; twenty-five per cent had sinusitis. Twenty-five per cent had obstructed noses with deviated septums. The teeth were grossly involved in ten per cent of the cases.

In the cases who were unable to walk seventy-five per cent had diseased tonsils. He reports one patient who after four serious operations on her nose became able to walk. Such cases he says give false hopes to others.

In the very advanced cases, he says, the bacteria have usually done their worst, and removal of foci of infection can accomplish but little. Focal infection plus factors which lower resistance seem to be the cause of arthritis.

Miller (Ky. Med. Jour., July, 1924, p. 248) says the types of arthritis known as deformans, osteo-hypertrophic, degenerative, metabolic and destructive arthritis, Heberdeen's nodes and chronic rheumatism are all secondary to foci of infection. One joint becomes a focus for others. The author cautions particularly to treat acute cases with great care. Acute arthritis joints should be put at rest by means of splints or by plaster of paris casts. Ten days or two weeks of this will usually relieve extreme pain and tenderness. After this active and passive movements with baking and massaging should be continued until the parts are again normal.

Swete, Dickson, Locke and Osgood recommend synovectomy in certain types of arthritis. The entire synovial membrane with all villous proliferations is removed. Active and passive motions are begun in about ten days. He cautions to recommend fresh air, sunshine and equitable climate, proper underclothing, and regular exercise. Poor persons who have to use their joints to stave off starvation have less stiffness and ankylosis than do the wealthy persons.

Knox (New Orleans Med. & Surg. Jour., Feb., 1925, p. 310) says arthritis does not receive the attention it deserves. Concerning the history of foci of infection he says Benjamin Rush first called attention to it over one hundred years ago, and in 1892 William Hunter again spoke of it. But until eighteen years ago little significance was attached to it. He emphasizes that the finding of one focus of infection does not exclude others. The yeast and entameba may be causes. The colon bacillus must not be forgotten. He reports two cases of arthritis due to infected seminal vesicles and prostate.

Twinch (Med. Jour. and Rec., April 15, 1925, p. 466) says rheumatism and arthritis may be easily confused; in fact it is difficult to tell where one leaves off and the other begins. He regards the colon as a harbor of infection responsible for nearly all chronic arthritis. Colon irrigations should be given daily for three to four weeks and then twice weekly. Acid colon contents call for an alkaline wash and an alkaline stool for an acid wash for the colon. He recommends implantation of bacillus acidophilus into the colon, as experiments have shown that streptococci will not grow in the presence of bacillus acidophilus. Colloidal lime and iodine have been found of much benefit. Chronic arthritics are always at a low ebb of health and everything possible to help them should be done.

Ely (Calif. and West. Med., June, 1924, p. 260) writes of the relation of chronic arthritis and

trauma. He says industrial insurance has to deal with the following type of cases: a man falls and wrenches his spine or a larger joint; at once or before long he has pain. X-ray examinations reveal spurring and lipping of the joints in question. The problem is: what relation is there between the trauma and the lesions. The author's contention is that the joint changes had been going on painlessly for a long time and that the trauma simply served to call attention to them. He says that the same contential conditions are found in joints in which there is no history of trauma. He stresses the importance of eradicating foci of infection and all intestinal parasites.

Miles J. Breuer (The Neb. Med. Jour., March, 1926, p. 112) in searching for foci of infection in arthritis adheres to the following formal list: "Mouth and teeth; throat and tonsils; paranasal sinuses; middle ear and mastoid; cervix; prostate and seminal vesicles; appendix; colon; rectum; kidney; urinary bladder; gall bladder. After the foci of infection have been removed give particular attention to building up the patient's general physical condition and to his eliminative organs—the bowels, kidneys, skin and lungs. He also recommends the ordinary local treatments, the usual drugs and occupational therapy.

Thompson (Boston Med. & Surg. Jour., Apr. 2, 1925, p. 658) says arthritis deformans, articular rheumatism, infectious, atrophic, and hypertrophic arthritis, rheumatoid arthritis, osteo-arthritis, proliferative and degenerative arthritis, polyarticular, senile, juvenile, trophic, metabolic, progressive, and scirrhus arthritis are terms many of which are identical or merge, one into the other.

He uses the general classification of infectious, atrophic, hypertrophic, and isotrophic arthritis. His contention is that the atrophic and isotrophic forms may come from endocrine disturbance as well as directly from infection. They come from hypothyroidism more than from any other endocrine dysfunction.

Riley and Smith (N. Y. State Jour. of Med., Mch. 13, 1925, p. 422) write. "A study of the bacterial flora of the bowels often reveals a dominant coccal or other foreign bacterial invasion of the contents that should be corrected by proper medical treatment and dietary regulations; it must be remembered, too, even an apparently normal flora may at times give rise to a toxemia by the excessive absorption of toxins." They recommend surgical removal of foci of infection; but before doing so they administer autogenous vaccines.

Kreuscher (J. A. M. A., LXXXVII, p. 1257) examined 900 cases of arthritis in the John B. Murphy Clinic from the standpoint of etiology; 25 per cent had had throat infections, usually tonsillitis; 18 per cent paranasal sinus infection; 17 per cent gonorrheal infections; 12 per cent genito-urinary tract infection; and five per cent intestinal stasis. He had been able to produce arthritis in guinea pigs and rabbits by injecting infectious material into ear veins. Ninety-seven per cent of the rabbits showed arthritis in one or more joints in 72 hours. He thinks that in all but a small per cent of cases there are foci of infection which are the definite cause of the arthritis.

Stern (J. A. M. A., LXXXVII, p. 1257) believes that many if not most cases of arthritis are due to basic disturbances of the metabolism of the joints from the absorption of infective or toxic substances from the bowels or elsewhere. There are

other cases, however, in which the etiology is not discoverable. He says Riedinger of Wurzburg tied off or destroyed the small veins leading from the patella and produced thereby a condition resembling hypertrophic arthritis of the human being. He believes Pemberton's ideas of lowered sugar tolerance are correct.

Lowman (J. A. M. A., LXXXVII, p. 1257) says that at the Orthopedic Hospital School of Los Angeles, eight to ten per cent of all patients, from infancy to twenty years of age, have protozoan infection.

In arthritic cases he reports parasitic involvement as follows: ameba histolytica, 25 per cent; chilomastix, 50 per cent; and tricomonus, 25 per cent. The relation of protozoa to arthritis is not clear. He approves of massage and heat with lessened diet and rest in bed.

Allen C. Nickol (J. A. M. A., LXXXVII, p. 1117) of Mayo Clinic, made 149 routine cultures from 138 cases of arthritis; 60 cultures were from tonsils; 125 animals were injected with them, 50 per cent of which developed joint lesions; 24 were from teeth and 56 animals were injected with them, 60 per cent developing joint lesions; 50 cultures were from the prostate and 110 animals were inoculated with these, 55 per cent of them developing joint lesions; 15 were from the cervix and 35 were injected with them, 35 per cent developing joint lesions.

In a series of 82 cases of chronic arthritis, especially osteo-arthritis, 220 rabbits were inoculated with cultures therefrom and localizations in the joints took place in 77 per cent. Seven per cent of joint infection developed when the cultures were from indefinite cases other than arthritis.

Barker (International Clinics, June, 1925, p. 212) entitles his article "Chronic Infectious Arthritis" and thereby implies that there may be other types. He believes firmly in the theory of focal infection as being the cause of arthritis—even of arthritis deformans. He says that in more than 75 per cent of the cases primary foci of infection are found in the head, most often in the tonsils. Next in frequency sequence come the gums and teeth, the paranasal sinuses, adenoids, and middle ear. After these sites come the genito-urinary apparatus, the gall bladder, the appendix, etc. Barker thinks every case of arthritis deserves to have a most searching examination for all foci of infection and whenever such are found they should be appropriately treated.

Irans (J. A. M. A. LXXXVII, p. 725) says chronic proliferative arthritis is often of infectious origin. Other cases fall into the class of arthritis deformans. Between these two groups are many other cases suggesting arthritis deformans but probably infectious in origin. He says there are two types of arthritis, the infectious and the metabolic. Trauma, weight bearing and muscle tension are all etiologic factors to be considered. Hereditary tendencies to arthritis are not uncommon. Arthritis rarely is associated with hyperthyroidism.

Clyde Brooks (J. A. M. A., LXXXVII, p. 1122) uses split protein to treat arthritis. He thinks non-specific protein is superior to vaccine for the reason that with the protein there is no reaction, chill or shock of any kind.

Eric Pritchard (Medical Journal and Record, April 15, 1925, p. 759) presents a short paper

which tends to controvert the theory that rheumatism and arthritis are the result of a specified infection.

N. J. Nessa (Radiology, August, 1925, p. 167) reports x-ray studies of a woman aged sixty, with infectious arthritis involving nearly all of her joints—with ankylosis of many of them. The condition had existed over forty years.

George K. Carpenter (Jour. of Texas State Med. Assn., Nov., 1924, p. 224) says all foci of infection should be removed or treated thoroughly, but not too much should be hoped for; in addition local heat, salicylates, and active and passive motion should be persistently used.

Owen (Ky. Med. Jour., July, 1924, p. 250) says that any doctor having a new case of arthritis should treat that case just as though he had never been examined and search him most carefully for foci of infection. Occasionally unexpected good results will come. To prevent deformities, keep up massage, active and passive motions and such measures as will improve the circulation.

Pemberton (J. A. M. A., LXXXVII, p. 752) believes that the menopause has a characteristic type of arthritis, and that a low caloric diet is important in treatment of it. A reduction of weight is often of value. He has found that arthritis rarely is associated with hyperthyroid conditions.

Hench (J. A. M. A. LXXXVII, p. 753) of the Mayo Clinic has used o-iodoxybenzoic acid in six cases; three had no benefit; two had slight and one marked improvement. He has also used mercurochrome—usually with disappointment.

Wright (Med. Jour. and Rec., May 20, 1925, p. 628) finds no relationship between any certain foods and rheumatism. He thinks it well for any certain case to avoid the food which experience teaches is the cause of trouble.

Turnbull (Boston Med. and Surg. Jour., Sept. 4, 1924, p. 438) reports four cases of arthritis in which there was sensitization to groups of foods. Elimination of the offending foods brought about improvement in every instance. One patient in particular found that reincluding the detrimental foods in his diet again brought on his arthritic symptoms. The author concludes that food allergy is a factor to be investigated for every case of arthritis.

Sweey (Med. Jour. & Rec., July 16, 1924, p. 62) reports a case of osteitis deformans which had ten to fifteen per cent phenolsulphophthalein elimination in two hours and other evidences of kidney impairment. The author does not attach etiologic significance to the kidney condition, but thinks it is a concomitant development with the arthritic manifestations.

Morrison (Ky. Med. Jour., July, 1924, p. 251) recommends removal of all foci of infection, repeated searchings for them, cutting down on starchy foods and the use of general common sense measures.

Carpenter (Ky. State Jour., July, 1924, p. 251) recommends rest and massage. "Out in the sticks they use pole-cat oil and rub heroically and go on to a happy recovery."

Cohn (New Orleans Med. & Surg. Jour., May,

1924, p. 501) discusses Willem's method of treating purulent arthritis which consists of puncture of the joint capsule as soon as pus develops; immediate active mobilization is instituted; weight bearing is insisted upon as soon as the temperature is below one hundred degrees. No drainage tubes are used and no irrigations are permitted. In joints that become distended arthrotomy with small opening left for discharge of synovial fluid makes the patient more comfortable and secures against infections.

Ely (Calif. & West. Med., Sept. 1925, p. 1157) divides arthritis into two classes: Type I is plainly due to infection. Type II is probably due to protozoa. In the Stanford studies thirty per cent of the cases studied had parasites; amoebia coli are most common and then come giardia, chilomastix, histoltica and trichomonas.

The treatment of the parasitic cases is to use neoarsphenamine, emetin and ipecac.

Llewellyn (Medical Jour. and Rec., May 20, 1925, p. 618) says thyroid disability is a common finding in rheumatic individuals. He calls especial attention to the paroxysmal and periodic tendency of rheumatic conditions. In cases where salicylates are ineffective the addition of thyroid therapy may get results.

J. G. Gardner (New Orleans Med. and Surg. Jour., Feb. 1925, p. 313) says in studying focal infections there are three factors; the virulence of invading bacteria, the character of the breeding place and the resistance of the patient. These three explain why one person may have so many foci of infection with little or no systemic effect and another may have extreme systemic involvement with no unmistakable focus of infection.

Barrow and Armstrong (Ill. Med. Jour., June, 1925, p. 427) write upon the occurrence of protozoan infection in arthritis and state that this type of infection is wide spread in the human race. It is characterized by depressive, toxic syndromes chronic in nature and unexplainable on other grounds.

Eidelsberg (Medical Jour. and Rec., June 3, 1925, p. 674) says that treatment of arthritis so often fails because of secondary metabolic and endocrine changes plus the extensive pathologic changes already taken place. The reason parenteral injections of milk are so often effective is for the reason that they speed up metabolism. This is shown especially in the increased sugar tolerance after milk injections.

Schmidt and Adams (J. A. M. A. LXXXVI, p. 535) of the Mayo Clinic saw fifty-one patients with arthritis who also had diabetes. In view of Pemberton's findings of high blood sugar in arthritis cases it was thought that controlling the sugar content of the blood might help the arthritis. Their conclusion is: "No noticeable improvement seems to occur in arthritic symptoms in consequence of the low carbohydrate regimen necessary in the presence of diabetes."

Young and Youmans (J. A. M. A., LXXXVII, p. 1849) report that Loevenhart of the University of Wisconsin treated a number of cases of arthritis with ortho-iodoxybenzoic acid with beneficial results.

In addition to the articles summarized above, the following articles have been reviewed in the Jour-

nal of the American Medical Association, to which reviews the reader is referred:—

Ashcroft, Cunningham, McMurray and Pemberton reported in Brit. Med. Jour., for July 4, 1925, their investigations upon fifty cases of arthritis deformans with regard to gastric secretion, basal metabolism, acid-base ratio, renal and hepatic efficiency, glucose tolerance and organisms. Abstracted in J. A. M. A., LXXXV, p. 471.

Seeliger, in Munich Medizin Wochen, Munich, June 18, 1926, writes on relation between trauma and arthritis. Abstr. J. A. M. A., LXXXVII, p. 714.

Mayers and Schroeder, Surg. Gyn. & Obs., 1926, p. 176. Abstr. J. A. M. A., LXXXVII, p. 1420.

Higgins, London Practitioner, Sept., 1926; abstr. J. A. M. A. LXXXVII, p. 1687.

Loeffler, Medizin. Klinik, Berlin, Sept. 17, 1926; abstr. J. A. M. A. LXXXVII, p. 1955.

Sorensen, Ugeskrift, f. Laeger, Copenhagen, Aug., 1926; abstr. J. A. M. A., LXXXVII, p. 1784.

Besson and Ehringer, Paris Medical, Oct. 30, 1926; abstr. J. A. M. A., LXXXVII, p. 2130.

Wahlberg, Munich. medizin. wochen., Munich, May 8, 1925; abstr. J. A. M. A., LXXXV, p. 158.

Staunig, Wiener Klin. wochen. Vienna, May 21, 1926; abstr. J. A. M. A. LXXXV, p. 235.

Douthwaite, Brit. Med. Jour., June 27, 1926; abstr. J. A. M. A. LXXXV, p. 390.

Fuchs, Centrulblatt f. Chir., Leipzig, Dec. 16, 1925; abstr. J. A. M. A. LXXXVI, p. 318.

Taddei, Rif. Med., Naples, May 25, 1925; abstr. J. A. M. A., LXXXV, p. 782.

Froelich, Paris Medical, July 18, 1925; abstr. J. A. M. A., LXXXV, p. 934.

Oro, Ref. Med., Naples, June 15, 1925; abstr. J. A. M. A., p. 934.

Krebs, Munich. medizin. wochen. Munich, Aug. 14, 1925; abstr. J. A. M. A. LXXXV, p. 1013.

Saethre, Norsk Mag. f. Laegevid., Oslo, Sept., 1925; abstr. J. A. M. A., LXXXV, p. 266.

Maza, Rev. de Medicin y Chir. Caracas, Mch. 31, 1925; abstr. J. A. M. A. LXXXV, p. 1435.

Hellman, Zeit. f. Kinder., Berlin, Sept. 28, 1925; abstr. J. A. M. A., LXXXV, p. 1596.

Smith, Brit. Med. Jour., Oct. 10, 1925; abstr. J. A. M. A. LXXXV, p. 1673; uses an oil containing 10 per cent guaiacol, 10 per cent iodine and 5 per cent camphor.

Singer, Medizin klin., Berlin, Oct. 19, 1925; abstr. J. A. M. A., LXXXV, p. 1680.

Gordon, Brit., Med. Jour., London, Jan., 1926; abstr. J. A. M. A. LXXXVI, p. 909.

Lowy, Medizin. klinik., Berlin, Feb. 19, 1926; abstr. J. A. M. A., LXXXVI, p. 1407.

Cumberbatch and Robinson, Brit. Med. Jour., Apr. 3, 1926; abstr. J. A. M. A., LXXXVI, p. 1661.

Trimold and Stoerber, Monat. f. Kinderh., Leipzig, Mch., 1926; abstr. J. A. M. A. LXXXVI, p. 597.

May, Bull. de la soc. Med. d. Hosp., Paris, Jan. 22, 1926; abstr. J. A. M. A., LXXXVI, p. 1100.

Richdorf and Griffith, Am. Jour. Dis. Ch., Feb., 1926; abstr. J. A. M. A. LXXXVI, p. 1243.

CLASSIFICATION AND DIAGNOSIS

(Edgar H. Brown, M. D.)

There are probably no questions that perplex the physician as much or that has as many different opinions in regard to it, as does that of arthritis. At the beginning of a study of an arthritis case, we should forget all of any preconceived ideas as to focal infection, basal metabolism or endocrinology. It is of course essential that we be familiar with the facts in regard to these matters, but this consideration should

be taken up at the close of our study of a case and not at the beginning.

Physical examination is second in importance to history taking in reaching the right basis for classification of arthritis. The taking of the family history with special reference to arthritis diatheses should first be made. It may be one can thus obtain a description of the visible joint lesions the patient's ancestors may have been afflicted with or the patient may recall that some member of his family had a limp or complained of stiffness or had suffered from lumbago, sciatica or other conditions that would be suggestive of arthritis.

Those observations will be valuable when put together with the personal history and physical examination of the patient. A background of this sort is very suggestive when obtainable, because hereditary transmission in one type of arthritis seems extremely common. It is not that the arthritis is inherited, but that there is a tendency toward this particular disease; any information giving the location of the arthritic lesions in former members of the patient's family and their age at time of such lesions is of importance.

After the family history attention is directed to the patient's present illness and previous diseases. Remember that there are many things of importance that a sick person will think not worthy of mention. Clinically, the toxic types of arthritis act the same as all inflammatory affairs and from an etiologic standpoint should be traceable back to a toxic origin, but it is not always possible to demonstrate conclusive evidences of a focal infection. Many such infections take place after the primary foci are cleaned up and this makes it difficult to place the responsibility; latent sinus infections, buried tonsils, mastoids, appendix, gall bladder, pus tubes, seminal vesicle, bone infections, stasis and fermentation of the gastro intestinal tract, typhoid, influenza, vegetative endocarditis and pneumonia, should be considered.

Hypertrophic osteo-arthritis is favored by a tardy elimination of body waste and trauma. This condition in the male I have found more often in the spine and hips, while in the female in the knees and phalangeal joints. The majority of these cases could be traced to occupational trauma. Age seems to have been a factor as most cases have been beyond middle life; their habits were a little more sedentary and the amount of food ingested was the same as taken during the more active period. The stimulation of the excretory functions helps in controlling the symptoms complained of.

The atrophic type of osteo-arthritis is found more in the earlier half of life and is confined more to the female than the male and we are liable to get a history of some nervous disorder. Frequent child bearing appears to create a tendency toward this variety of arthritis. The patients have a lowered nervous stability and are not able to meet the general wear and tear of life as they should. In taking their history the following data will be found helpful in arriving at a diagnosis. The manner of onset, clinical course, duration and associated conditions of health, history of injury, emotional excitement, temperament and occupation.

In those cases where the joint changes are apparent as those of the terminal phalanges first impressions are practically sufficient to enable one to determine the type of arthritis one is dealing with. As we know that these joints are rarely involved with any other type than hypertrophic and their appearance is very characteristic.

As we go upwards, leaving the terminal finger joints, our diagnosis is between toxic origin and nutritional (atrophic) disturbances. The atrophic lesions are seldom confined to the smaller joints, so that the diagnostic problem, except in cases where the smaller articulations are first to be involved, is not a very complicated one. When the larger joints are first to become involved and particularly when confined to a single joint, the diagnosis is between the infection and metabolic types (hypertrophic) as the nutritional, i. e. atrophic arthritis, never occurs as monarticular as far as I know.

Distribution of lesions has some diagnostic significance, and even when a case is seen late after extensive involvement has taken place, it is well worth while to go minutely into the history of the various joints concerned. In certain of the nutritional disturbances there is a tendency for them to appear symmetrically on the two sides of the body.

The age of the patient at the time of the evidence of joint lesions is suggestive. Hypertrophic disturbances seldom occur before forty-five and are practically well established by the age of sixty, while the toxic cases are more common from 30 to 45 with a few appearing in childhood (Still's disease) and in advanced senility. To the early adult period we look for the beginning of the majority of the nutritional (atrophic) cases.

The general health of the hypertrophic types is not much affected as the patients are not ill; but in the toxic cases the gen-

eral health is involved to a greater or less degree.

Deformity, exclusive of swelling, is caused by contractures, osseous erosions, cartilaginous atrophy, and proliferative spur formation, so placed as to form a mechanical block. It is only in the toxic cases that muscular spasm operates permanently to produce flexion deformity. Proliferative spur formation is caused by the metabolic type, while the atrophic variety causes interosseous atrophy and atrophy of the cartilage.

By palpation we attempt to determine the surface temperature, character of the swelling, the cause of deformity or limitation of motion.

In the hypertrophic type the enlargements are almost entirely osseous and rarely is there an excess amount of fluid or capsular thickening found, and the atrophy above or below the joint is less than in the toxic patient.

The atrophic cases in the early stages show some increase in surface temperature and capsular thickening, but later this gives way to a marked atrophy of all structures entering into the make-up of the joint, as well as atrophy of the skin.

The ankylosis of the atrophic cases is caused by a thinning and erosion of the joint cartilages. In all three processes, i. e. the toxic, atrophic and hypertrophic, the objective signs are what one would naturally expect from the nature of the underlying pathology.

While the systemic examination reveals clinical differences in the types, so will different pathologic characteristics be shown by the x-ray.

Many arthritic patients are not easy to classify, and this fact alone should make us all the more careful in our diagnostic procedures.

EL PASO MASONIC HOSPITAL STAFF

Sept. 9, 1926.

Discussion topics for the evening were Eosinophilic Leukemia, and Diverticulosis. Charts for consideration were taken from files of patients discharged during the month of August.

DR. J. H. GAMBRELL presented the first case, diagnosis being pyloric obstruction, carcinomatous, with diverticulosis found at autopsy. The patient is a small, emaciated, cachectic-appearing man, with almost the typical bronzed look of a patient suffering from carcinoma. He is 80 years of age; family history negative for hereditary diseases. Patient gives an unsatisfactory history, saying only that he has been well all his life except for indigestion, which, he states, he has had all his life.

Complaint: Inability to retain food, indigestion, takes only a small quantity of food which is retained for a period varying from a few minutes to six hours, and then is vomited. He has noticed a

lump in his abdomen for about six months. Prior to ten days ago patient noticed a sensation as if fluid or food were passing by an obstruction at about this point. He has been subject to constipation, for a great many years, but more marked in the last year. Is an habitual user of mineral oil and Black Draught and other patent medicines. Patient has not complained of pain, but says he has felt "clogged up" and it is for this condition that he takes purgatives constantly. About seven or eight days ago the gross character of the vomitus was very dark, almost black. An enema resulted in the same character of material. Patient thinks he has lost some weight, but not much, during the past year. He has noticed some difficulty, at times only, of starting the flow of urine, but has never been unable to void.

Physical: Teeth in bad condition, some evidence of chronic pharyngitis. A few coarse rales in the chest. No sounds indicative of valve leaks; general muscular tone of the heart is somewhat labored, S. B. P., 140; D. B. P., 100; P. P., 40; pulse, regular, 80. No distention of the abdomen, no rigidity; musculature rather flabby. There is a small round tumor lying in the subcutaneous tissue about one inch above the umbilicus, slightly to the right of the median line, which has the markings of a lipoma. There is an abdominal tumor lying within the abdomen, about three-quarters of an inch to the right of the midline, on a level with the upper line of the umbilicus, which can be seen through the thin abdominal wall. On palpation this tumor is found to be nodular, firm in consistency, and appears to be about 2 1/4 inches long by 1 1/2 inches in breadth. It is apparently a tumor involving the pylorus of the stomach and is rather fixed in this position. Little or no pain on palpation. Liver is enlarged, extending about three finger breadths below the costal margin. Prostate is enlarged about twice its normal size, very firm and has a feel not unlike carcinoma. No enlargements of superficial lymph glands. Musculature rather flabby. Marked diminution of patella reflexes. Pupillary reflexes normal. Patient has a cloudiness indicating early stage of senile cataract in both eyes.

Diagnosis: Complete occlusion of pylorus, (verified by x-ray), carcinomatous.

Operation: Under ethylene anesthesia, incision was made in the midline, starting about two inches below the ensiform cartilage and extending half an inch below the umbilicus, going around the umbilicus to the left. Inspection revealed an extensive carcinomatous involvement, the whole pyloric end of the stomach being involved. There were plastic adhesions around the pylorus, to various loops of small intestine. No tissue was removed. A gastrojejunostomy, posterior, was done, and the abdomen closed. No drainage was instituted. The patient left the table in fair post-operative condition. While on the table attempt was made to give intravenous injection, but blood clotted in the needle, and veins collapsed, and this proved impossible.

Progress: Glucose was administered by rectum, patient did not vomit but once in 24 hours following operation; proctoclysis not retained; patient gradually grew weaker and expired the third day.

Autopsy was held, the following being the report:

"Partial autopsy done by DR. GEORGE TURNER, case of Dr. Gambrell:

"The lower margin of the liver was found to be about 10 centimeters below the ribs. The fundus of the gall bladder was level with the crest of the

ilium. Gall-bladder large, distended with greenish colored bile, and hour-glass in type.

"Stomach: There is a hard mass involving the pylorus and stomach wall for a distance of 15 or 20 centimeters. The remaining abdominal structures were in normal position, mesenteric glands large and easily palpable. The stomach is dilated and sacular. The pylorus is completely closed due to thickening and constriction of the structures by carcinoma. The stomach wall is thickened, hard and carcinomatous, throughout all the pyloric end. The enterostomy was in good condition on the posterior wall.

"Liver: Is rather firm and infiltrated with scattered carcinomatous metastases.

"Colon: The transverse, descending colon and sigmoid present numerous diverticuli. This condition has nothing to do with the cancer. It is, however, unusual to see such a large number of diverticuli (about 150) due to congenital deficiency in the musculature of the colon, resulting in herniation.

"Anatomical diagnosis: (1) Carcinoma; carcinoma of stomach with complete obstruction of pylorus; (2) metastases in liver and surrounding lymphatics; (3) multiple diverticuli of colon."

DR. GMBRELL: I want to say in the beginning that this case was not operated for carcinoma of the stomach, but to prevent the patient from starving to death, because of the complete occlusion of the pylorus. The diverticulosis was not found until autopsy was done.

Fluoroscopic pictures were shown. Dr. George Turner, hospital pathologist, made a drawing, showing the coats of the colon, and demonstrating that diverticuli occurred when the muscle bundles are absent, with consequent weakness in the bowel at that point, with resulting herniation. The specimen was shown and examined.

Discussion brought out the fact that probably a lot of "left-sided appendicitis" is really diverticulosis. Symptoms are the same as of appendicitis, except for the location of the pain. Sometimes these pockets become occluded, perforate, and peritonitis follows. We believe these cases to be rare. Johns Hopkins autopsy reports in 2500 cases show only 17 cases of diverticulosis.

DR. E. J. CUMMINS reported the following case, diverticulitis being discovered at the time of operation.

Patient is a woman about 50 years of age, well preserved; father died of pneumonia, and mother died of intestinal obstruction.

Complaint: Pain in the lower abdomen, gas on the stomach, diarrhea.

Onset and course: On May 14th, after taking some cathartic medicine, patient's bowels began to run off. They moved several times both day and night for several days. Associated with this diarrhea was considerable pain in the lower abdomen; patient was unable to state whether the pain was in the rectum or lower abdomen. She states that the pain is worse when her bowels move. No blood or mucus passed. The diarrhea soon stopped but her pain continued. A day or two after the onset of her diarrhea, she commenced to run a temperature ranging from 99 to 101. She has had indigestion and sour stomach for years, associated with nausea. Some foods do not agree with her. The stomach feels better when it is full. Eating sometimes relieves her. She has passed some blood from the bowels for over a period of 13 years, is ordinarily constipated. When a girl she had several hemorrhages apparently from one of her kidneys; about 13 years ago,

after the birth of her last baby, she had acute nephritis. Several years ago she had a spell of colicky pain, the pain localizing in the right kidney region; diagnosis not made at that time. On the 5th of last November, she was referred to Dr. Garrett for examination of the gastrointestinal tract, ameba histolytica found. Treatment was taken and the last stool examination did not reveal any of these organisms. She has had erysipelas twice, both times on the face and head; muscular rheumatism at times; tonsillitis years ago. Seven years ago she had a perineorrhaphy and some cysts removed from the cervix. She is the mother of six children and passed the menopause four years ago after application of radium.

Physical: Rather pale woman who looks sick; fairly well nourished. Temperature, 99; pulse, 80; resp., 20; blood pressure, 138-90. Abdomen: No tumor masses felt anywhere in the abdominal cavity; some tenderness over the lower abdomen, more marked over the gall bladder. Vaginal. Cervix in normal position; uterus normal in size and position. The adnexa on the right side seems to be normal. There is a small hard mass behind the uterus and another to the left, which apparently is in the broad ligament. These masses are very tender. Bimanual examination causes the patient to cry with pain. No vaginal discharge. Proctoscope reveals no pathology of the rectum. Blood pressure and urinalyses, many examinations, reveal no abnormalities.

Diagnosis: Cholecystitis, salpingitis, probably, fibroids. Blood count, 6,850 leukocytes, 63 polys., hemoglobin, 90 per cent.

Operation: Incision was made in the median line between the navel and the symphysis. The uterus was drawn into the wound and found to be normal in size, shape and consistency. It contained no fibroid. The tubes and ovaries were found to be normal. A mass was felt low down in the pelvis and when delivered into the field of operation was found to be the sigmoid. The mass was about four inches long, quite indurated and seemed to involve the entire circumference of the sigmoid. The appendices epiploicae, about six or eight in number, projected from the sigmoid, and they were firm, acutely inflamed, two or three being the seat of hemorrhage in the tips, the tips being gangrenous. The peritoneal coat of the sigmoid was acutely inflamed. There did not seem to be any circular constriction of the bowel. There were palpable lymph nodes in the mesentery of the sigmoid. There was no evidence of metastasis. The appendix was the seat of a chronic fibrosis; the lumen was practically obliterated throughout its entire length. There was a tab of fat in the mesoappendix which resembled the appendices epiploicae of the sigmoid. The gall bladder was normal to palpation. The appendix was removed. Two of the appendices epiploicae were removed for examination. The wound was closed without drain.

Patient made an uneventful recovery, leaving the hospital in good condition on the sixteenth day.

DR. CUMMINS: This diagnosis was not made until operation, and is discussed tonight to show how important it is to do everything before diagnosis is pronounced final. This patient was given a barium meal, and fluoroscopic pictures made, but no plates. When I first picked up the sigmoid and found this inflamed peculiar condition, it flashed through my mind that this was a case of carcinoma of the sigmoid, but could not account for the acute inflammation. Further examination disclosed that it was diverticulitis. Debate arose in my mind about the procedure to follow surgical-

ly. My better judgment said "do nothing." Pictures made about a month after operation showed the barium, after it entered the rectum, shoot past as it always does when passing an inflamed area in the intestines. X-ray, 48 hours later, proved that the patient had multiple diverticulitis of the sigmoid. After reading all the literature I could find on this subject, this is the first case I find reported in which the symptoms were not of left-sided appendicitis, but apparently pelvic in origin. This proves one thing. Gastrointestinal examinations without pictures do not reveal the entire pathology. I should have suspected diverticulitis, I probably shall next time.

As to what to do in these cases, most authorities agree that the proper thing in sigmoid diverticulosis is to leave them alone, not to try to do anything during acute stage because of the high mortality. Leave them alone anyway unless the patient is having a lot of trouble. Sometimes resection of the bowel is necessary or the diverticulum sometimes can be removed just as one removes an appendix. The mortality is very high and the advice is to leave them alone, keep the bowels open, give the patient bismuth enemas to keep the pockets full. Cancer occurs in a large percentage of these cases, and is one argument for radical operation. The next is perforation with abscess, and then it becomes a question of draining like any other abdominal abscess. This was an interesting case and I have learned a lot from it. Since the operation the temperature has subsided, the patient has had no return of the spells with her side, and no acute exacerbation of symptoms.

DR. CASELLAS: I wish to make a plea for the roentgenologist. The patient often comes with the plea of not having enough money to go through the whole amount of work the roentgenologist deems necessary, and specifies what work he can afford. I beg that the doctors tell the roentgenologist the patient's financial condition, and ask him to make his fee as conservative as possible, but not to limit the amount of work necessary for correct diagnosis. Especially I ask this in gastrointestinal work, as fluoroscopic work alone, in these cases, is not entirely satisfactory.

DR. GAMBRELL: I am just wondering whether, in gastro-intestinal examination, we do not all stop too soon. The usual gastro-intestinal study ends in the study of the filled colon. In my opinion, gastro-intestinal study should continue until the entire tract is absolutely clear. Sometimes 96 hours is required, but the lower bowel should be empty.

DR. HARTMAN, Dean of Medical Department of Texas University: I have nothing to add to what has already been said, except that, judging from my experience in postmortem work, these cases are quite rare. I have been particularly interested in the acute inflammatory changes that Dr. Cummins told about. In the three cases I have seen out of 150 autopsies, none showed acute inflammatory changes. The ones that I saw showed a chronic condition, with a much larger number of diverticuli, but no acute inflammation. The condition, as so well described by you gentlemen, is what we have reported on section there, the absence of the muscular coat, not necessarily destruction of muscular coat but separation of muscle bands. In one case we had, diverticuli were distinctly larger and the mucosa showed chronic catarrhal inflammation but no extension into the serous coat.

DR. F. P. MILLER: My main experience has

been with Meckle's diverticulum, in connection with appendicitis. In one case I overlooked Meckle's diverticulum and it was found by another surgeon. In regard to Dr. Cummins' case, it is easy to see how bimanual examination in that case would make it impossible to make a diagnosis between inflammatory condition of the adnexa and diverticulosis. I saw one case thought to be diverticulosis of the esophagus, patient having great difficulty in swallowing. This did not prove to be the trouble at all, but continuing to use barium, carcinoma of the stomach in the larger curvature, in early stage, was revealed. Regurgitation was the only symptom.

This ended the discussion of Dr. Cummins' case. DR. GEORGE TURNER, pathologist at Masonic Hospital, presented a case of eosinophilic leukemia, as follows:

The patient came to El Paso from Georgia after having had dyspnea and a diagnosis of asthma for eight years. He was a railroad conductor, 38 years old. Early history is not of much consequence; claims to have had typhoid in early life, and influenza during the epidemic; other than this remembers nothing except asthma, which he has had at intervals or the past eight years. At first he was given adrenalin and he did not have to stop work. Sometimes he would go for a period of weeks or months following administration of adrenalin without a repeating dose. Finally the attacks became more frequent and more severe. He was placed in a hospital for two weeks, lost weight but gradually got better and returned to work.

This attack for which he entered the hospital in El Paso for diagnosis and treatment, began in January, grew continuously worse, condition being worse than at any time since the onset of the disease. He soon developed a reaction from adrenalin, and about two months before coming to El Paso he had been put on morphine for relief, was taking about two grains a day, and had lost about 30 pounds. Dyspnea continued; he got no relief except when under the influence of morphine. Pulse was 130; temperature, 101; feet badly swollen; pulse feeble as well as rapid. He was expectorating about ten ounces of sputum daily.

Leukocyte count made in Georgia showed 30,000 and x-rays were made, the patient told that he had sinus trouble, and he was operated, no pus being found when they drained the ethmoids. It was then decided that he had cholecystitis and he was prepared for gall-bladder operation, when doubt arose as to whether he could stand this operation, and the patient was sent west.

When I first saw him I made a blood count, finding 33,050 leukocytes, with 74 per cent eosinophiles. I gave up the idea of the possibility of pus, and thought perhaps he had trichinosis, although he gave no history of such infection. No sudden onset, no acute pain, muscles not sore, no tenderness of muscles; stool examination showed nothing. I then decided it was a primary blood excursion. I had never seen such a percentage of eosinophiles. There is sometimes a mild eosinophilia in bronchial asthma, but no such count as that, never showing 74 per cent. In Anderson and Boston's book on diagnosis, I found several cases on record called "eosinophilic leukemia," the count running about like this one, with dyspnea, signs of advanced heart disease, with no evidence of nephritis, blood chemistry normal. The condition described as leukemia showed eosinophiles running as high as 80 and 90, varying mostly from 40 to 85 per cent.

It was a question what to do with this patient. He was on morphine, taking about two grains a day, had been told that he was going to die, and had made all his arrangements to that effect. He could not lie down to sleep, had considerable pain in his long bones, and painful swelling in his feet, except when under the influence of morphine. I began to treat him for leukemia. Began to treat him with x-ray, digitalis and Fowler's solution. That night he lay down a part of the night for the first time in five months. The next night he lay down most of the night. An interesting thing from the standpoint of the pathologist is that, following the x-ray treatments, the leukocyte count first dropped considerably and later went up. Clinically he grew better. After the second x-ray, leucocyte count went to 55,800, eosinophiles 80 per cent. This condition is like leukemia, in that there is increase in white cells without inflammatory cause, and the cells vary as much as 8,000 to 10,000 in 24 hours. It differs from leukemia in that the cells were well formed, there being no half developed cells. X-ray dosage was increased one and one-half per cent, and applied to the chest and long bones. Following this the leukocyte count dropped and the clinical symptoms continued to improve. He was kept in the hospital a week after the swelling subsided, and after he was entirely off of morphine. He had

gained some weight, and is now gaining about five or six pounds a week. I cannot help but think he will have a recurrent attack, but we are hoping he will remain in an interval, if this is leukemia at all. It seems from the blood findings and from the clinical signs that he has the condition described by Anderson and Boston.

Laboratory reports: Sputum: tenacious, grayish white, tubercle bacilli not demonstrable. Negative for blood; few diplococci, few catarrhalis, few staphylococci. Blood Wassermann negative; blood urea 32 mg. per 100 c.c. The last count made, Sept. 15, 1926, showed white cells, 7800; eosinophiles, 14.

X-ray of chest: Diaphragmatic excursion is limited to adhesions on each side. The hiluses are thickened considerably, and contain calcified glands. The bronchi show marked peribronchial thickening. A scarry interstitial infiltration is continuous from the hilus area on each side into the lung field. This condition is more marked on the right side, where it extends to the outer third of the lung.

The following members of the Staff were present: Drs. Gambrell, Rawlings, Barrett, Miller, Saford, Casellas, Molloy, Nixon, Barnes, Strong and Cummins.

A CASE OF STATUS LYMPHATICUS

J. A. RAWLINGS, M. D.
EL PASO, TEXAS

Infant, Henry N., aged nineteen months. Parents both living and healthy; one other child living, aged five years. One brother died at eleven months, of enterocolitis. This child was breast-fed up to four months, then with cows' milk supplementing. Had no serious illness previously. Spent the early part of summer in the mountains. While there, had a severe attack of tonsillitis and was brought home, July 29th, with postcervical glands enlarged on both sides, especially on right; also other glands of body were enlarged. Child ran a septic temperature for ten days or more and then the postcervical gland on right side pointed, and was opened. It drained for a week or more, then closed up and had to be opened again. This drained about ten days and healed permanently, and the child apparently made a good recovery. I did not hear from him again until about 8 p. m., of January 14th, when the mother telephoned that the child had a cough and temperature of 102°. Advice was given, and neither the mother nor I deemed it necessary to see him until the following morning.

I called at 8 a. m. When seen this time, the child was breathing hard and chest

showed bronchial rales, with red throat; temperature, 102°; respiration, 30; pulse, 140.

A diagnosis of influenza with laryngitis and bronchitis was made. The child was not in very great distress at this time. Tincture benzoin compound steaming was ordered and appropriate treatment for the disease was started. It might be said that a severe epidemic of influenza was just starting in the city at this time.

Just before noon the mother telephoned that the child was having more difficulty in breathing; however, he was not seen again until about 2 p. m. At this time he was showing signs of exhaustion and was cyanotic, with marked signs of laryngeal stenosis with inspiratory dyspnea. Respiration was 40, pulse, 160, and temperature, 103. The picture had changed markedly for the worse since morning and the child looked as though he could not live more than an hour or two longer. Owing to the laryngeal stridor, I believed I was dealing with a laryngeal diphtheria, so I telephoned at once to Dr. Leigh to come and bring some antitoxin, and to Dr. Schuster to come prepared to intubate.

Dr. Leigh arrived first with the anti-

toxin. He concurred in my diagnosis, so we opened the antitoxin ready to give, intending to give it intravenously. But first we did a desensitizing test with the antitoxin, which was negative. A 20 c. c. unit package was transferred to another more suitable syringe; the mother was instructed to hold the child, as I held the head in extension while Dr. Leigh was to give the antitoxin into the external jugular vein. Dr. Leigh entered the vein and was just starting to inject, when the child suddenly expired, with scarcely a struggle, and before the antitoxin had entered the vein.

Dr. Schuster arrived at this time and immediately introduced a tube into the trachea; we also started artificial respiration and gave adrenalin into the heart, but the heart had already ceased to act, so we had no response to anything.

Death no doubt was quickened by the slight struggle over the insertion of the needle, in the effort to give the antitoxin, but I am sure death would have followed soon, in any event. We were at a loss to account for the sudden death except upon the hypothesis of status lymphaticus, so asked for, and obtained, a postmortem. Briefly, the findings were as follows:

"On opening the chest, both pleural cavities were free of fluid and adhesions. Lungs were air-containing; left was somewhat collapsed. The thymus covered the whole upper anterior part of the chest and extended well down onto the heart. It measured 12 by 7.5 cm. and weighed thirty-seven grams. The average weight of the thymus gland is six to seven grams at birth; and from birth to five years, three to four grams, and any weight over ten grams may be considered abnormal. The heart seemed rather large but contained no gross lesions. Larynx and upper part of the trachea were removed. Trachea was free. The lymphoid tissue at the base of the tongue was prominent, though not more so than has been seen at many other times. The epiglottis with the tissue below it, on the posterior side of the larynx, was so badly swollen that the opening in the epiglottis was completely closed. On opening the larynx, the vocal cords could hardly be seen and there was a large amount of soft, flabby tissue above the cords that connected with the epiglottis and helped occlude the cavity. The question is whether the opening between the cords was occluded before the epiglottis swelled."

Death evidently was due to status lymphaticus.

EL PASO COUNTY NEWS

The El Paso County Medical Society elected the following officers for 1927, at their annual meeting on Monday, Dec 20th:

E. B. Rogers, President.

W. R. Jamieson, Vice-President.

P. R. Casellas, Secretary-Treasurer.

E. C. Prentiss, Society's Representative of Southwestern Section of American Association for the Advancement of Science.

F. D. Garrett, Censor.

J. A. Rawlings and Branch Craig, Milk Committee.

Orville Egbert, Associate Editor of Southwestern Medicine.

Jacob Rogde, Surgeon to the local A. S. & R. Smelter, was elected to membership of the County Society.

DRS. CATHCART & MASON, local roentgenologists, are enlarging their suite and adding new equipment to their already elaborate plant.

DR. G. N. THOMAS has accepted a position with the Madera Lumber Company, at Madera, Chihuahua.

DR. O. E. BROWN, local surgeon of Southern Pacific, Tucumcari, New Mexico, was a professional visitor in El Paso December 24th.

DR. F. B. EVANS, of Tucumcari, vice president of Medical and Surgical Association of the Southwest, was in El Paso on professional business December 24th.

DR. W. J. DAVIS sailed from New York in December for Vienna, where he will do special study in eye, ear, nose and throat.

DRS. W. E. VANDEVERE and W. E. JOHNSON have left El Paso to enter a clinic group in Santa Barbara, Calif.

DR. FELIX P. MILLER will present a paper before the Sectional Meeting for Oklahoma, Texas and New Mexico of American College of Surgeons, meeting in Tulsa, Oklahoma, January 28 and 29.

DR. SCURRY L. TERRELL will leave early in January for a cruise down the South American Coast and crossing the South Atlantic to tour Africa. He will be gone about four months.

CHAVES COUNTY, N. M. NEWS

Several of the ROSWELL, N. M., DOCTORS spent the open hunting season in adjoining mountains, but if any of them got anything more than a bad cold, it has not been made known. (Note:—Yes, Dr. Bruce Connor, a dentist of Roswell "got" one of his ears shot off by a Navajo Indian.)

MISS FANNIE YATER, daughter of DR. C. M. YATER, of Roswell, N. M., will leave in a few days for a year in a Conservatory of Music, at Fort Worth, Tex.

DRS. JOYNER, INGALLS, BEESON, BRADLEY, HORWITZ and YATER, of Roswell, N. M., attended the meeting of the Pecos Valley Medical Association, at Carlsbad, on October 28th, Drs. Beeson and Joyner remaining over to explore the Carlsbad Caverns on the 29th, the others returning home.

DR. C. M. YATER, of Roswell, was the victim of an accident several weeks ago that necessitated his going on crutches several weeks, on account of injury to one foot and knee, caused by a fall. He is up and about now, having discarded his crutches.

St. Joseph's Hospital

Phoenix, Arizona

Accredited Class A General Hospital of 125 beds.

Open Staff Organization
with Resident House Physician

SURGICAL:—The Surgical Department consists of three major and two specialist operating rooms, with anesthetic and all accessory rooms. It is completely equipped with every surgical convenience; nitrous oxide and ethylene gas apparatus.

OBSTETRICAL:—The Obstetrical Department is in the Annex, and has its own operating and delivery rooms, with all accessory equipment for any type of emergency obstetrical work.

LABORATORY:—Under direction of a competent pathologist; immediate frozen sections and diagnosis, when desired. All blood, serological and chemical examinations promptly performed by competent technicians under direct supervision of the pathologist.

X-RAY AND RADIUM:—Fluoroscopic and radiographic work by competent radiologist. Urological department adjacent to x-ray room for prompt pyelographic work. High voltage x-ray equipment for pre-operative and post-operative therapy. Radium available for cases requiring this treatment.

BASAL METABOLISM:—This work is in charge of a competent metabolist and can be done at bedside or in metabolism room.

DIETARY:—A trained dietician working in conjunction with the clinical laboratory makes possible the accurate study of patients whose diets need to be adjusted, particularly diabetics who require the determination of carbohydrate tolerance and insulin requirements.

In Charge of

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MEDICAL & SURGICAL ASSOCIATION OF THE SOUTHWEST

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AFTER TEN YEARS

With this issue, SOUTHWESTERN MEDICINE starts its eleventh year of publication. In 1917, the Arizona Medical Journal and the New Mexico Medical Journal, with the El Paso County Medical Bulletin, merged and Southwestern Medicine was established. During the war period it was kept alive by the devoted attention of the medical profession of El Paso. In 1922 the present editorial management took charge, and with the loyal support of many members of the profession in the southwest, a firm foundation was laid for our official journal. Two years ago, satisfactory arrangements were made with our present publishers, and at the beginning of this year, SOUTHWESTERN MEDICINE enlarges its reading columns to forty pages. We now have a loyal and enthusiastic editorial staff and the journal receives favorable comment wherever it goes.

We ask from our readers, during the coming year, cooperation in the form of reports of cases, personal news or information of interest to the medical profession.

No one connected with the editorial staff receives any payment for the services rendered, including long hours of work which might be spent much more pleasantly in recreation. Certainly, if the editorial staff are willing to give up this time and energy, not for their own benefit, but for the profession of the southwest, that profession should reciprocate by the cooperation which we ask.

ARIZONA STATE MEDICAL ASSOCIATION

The dates for the next annual meeting, which is to be held in Yuma, Ariz., have been set for April 21, 22 and 23, 1927. The Yuma County Medical Society will be the hosts for this meeting and are already planning the preparations for staging the convention and entertaining the delegates and visitors.

The headquarters will be at the Hotel Del-Ming, the fine new hotel recently completed and opened to the public. This hotel has seventy rooms and those who plan to attend the meeting should not delay too long making reservations for accommodations.

Dr. Charles S. Vivian, president-elect of the Association, has been made Chairman of the General Program Committee, to arrange for the papers and other features of the scientific program. It is Dr. Vivian's desire that all members who intend to present papers notify him at once and plan to submit a synopsis of the paper for publication in the March issue of SOUTHWESTERN MEDICINE. Dr. Vivian will work in conjunction with the local committee from the Yuma County Society in arranging special features of the program.

The secretary of the Association, Dr. D. F. Harbridge, announces that the annual dues are now payable, and all members should make payment through their respective county secretaries. Dr. E. S. Miller, secretary of Coconino County Medical Society, is, as usual, the first secretary to make his returns to the Association, having already sent in the dues for all members of that society for 1927.

HARRY HINKLE STARK

(Submitted by the Committee on Necrology of the Medical & Surgical Association of the Southwest.)

After a long illness Dr. H. H. Stark, of El Paso, Texas, died Oct. 22, 1926, of pulmonary tuberculosis.

He was born at Sullivan, Indiana, Nov. 15, 1867, where he attended the public schools. In 1888, he graduated from the St. Louis College of Pharmacy, and for two years following was Professor of Pharmacology in that institution. Later he graduated in medicine.

In 1898, he located in El Paso and at once took an active part in the growing city as a citizen and physician. At that time he was practicing internal medicine and was the physician to many of our leading families. During the building of the El Paso & Southwestern railroad from Bisbee to El Paso he was surgeon to the construction forces. Later he was local surgeon for that road in El Paso for a time. In 1905, he went to Vienna for special study in eye, ear, nose and throat. While there he organized and was secretary of the American Medical Association of Vienna. In 1907 he went to Prague for further study and was assistant to Prof. Anton Elschnig in the Eye Clinic of the German Hospital. In 1908 he attended the Royal London Ophthalmic Hospital and later Mansfield Eye Hospital in London. These special studies occupied about three years and laid well the foundation for his future success, especially in diseases of the eye.

He was a charter member of the El Paso County Medical Society, a member of the Texas Medical Association, American Medical Association, the Tri-State Medical Society, the American College of Surgeons and the American Ophthalmological Society. He was treasurer of the El Paso Red Cross during the War, and Captain in the Medical Corps, U. S. A.

In 1914, Dr. Stark was married in New York to Mrs. Bertha Congdon Stauch, who survives him. He and his wife both came from revolutionary stock. He belonged to the Sons of the Revolution, and was a Rotarian. He was eye and ear surgeon to the old Southwestern and the Southern Pacific railroads. He was a member of the Board of Managers of Southwestern Medicine from its organization, and by his wise and helpful counsel enabled it to pass many trying times.

Dr. Stark was an investigator of high rank in his chosen specialty, and made many contributions to the leading journals such as *Journal A. M. A.*, *American Jour.*

of *Ophthalmology*, *Archives of Ophthalmology*, *Annals of Otolaryngology*, *Rhinology* and *Laryngology*. His work on tuberculosis of the eye won for him a national and international reputation. His important papers are too numerous to mention in detail. A few may be mentioned as showing the breadth of his work; "Report of Congenital Tumor of the Eye of Doubtful Classification;" "Diagnosis of Chronic Intraocular Tuberculosis;" "Ophthalmia Myasis Externa Due to Larva of *Oestrus Ovis*;" "Retrolbulbar Neuritis Secondary to Disease of the Nasal Sinuses;" "Twenty-five Cases of Vincent's Angina Successfully Treated with Sodium Perborate". (This work was done in connection with Dr. Henri Letord, the discoverer of the perborate treatment of Vincent's angina); "Three Cases of Unusual Vitreous Opacities." He was always on the lookout for rare cases. He was among the first to report tularemia of the eye. He had a broad view of medicine and always looked to general causes for the local manifestations in his specialty. He had a well-balanced mind, keen insight into the problems that confronted him, a calm persistence in gathering facts, with the ability to see straight and draw sane conclusions. Those who knew him best came to value his opinions most highly. He was an enthusiastic worker. He loved his city and his fellows. He often said that we had the richest field of which he knew in clinical and pathological material. He confirmed the old adage that the promised land lies at your feet. He always had a word of encouragement for others and inspired them to do good work and to investigate. With characteristic modesty he said that the secret of his success was in keeping his office hours. We know that his success came from his love of science, his singleness of purpose, his persistence in solving difficult problems, his honesty in all things, his faithfulness to his fellows, and from a well endowed mind. His life is well worth study for the many good lessons that it teaches. In his death we have indeed suffered a great loss.

The following personal tribute from Dr. Edward Jackson, of Denver, Colorado, is also included as part of this obituary report:—

To build up a successful practice in medicine, to win the respect and confidence of the profession, to contribute papers of permanent value in medical literature, constitutes no small achievement under any circumstances. Dr. H. H. Stark did these things, in spite of the handicaps of poor health and the consequent necessity to live

far from the established centers of medical learning. The appreciation of his colleagues and their respect for his professional achievements and ethical conduct, was shown by his Fellowship in the American College of Surgeons and his election to the limited membership of the American Ophthalmological Society.

His industry and thoroughness in the study of cases, and his honest statement of what he observed, overcame the barrier of distance and brought appreciation for his work on its merits. His readiness to contribute all that he could to the success of the medical gatherings with which he was associated, made for him warm friends; and it somewhat overcame the obstacles to advancement that his dignified reserve and avoidance of pushing himself forward might otherwise have been. All who knew him well learned that he was at all times a kindly, intelligent, earnest medical advisor, one for whose conduct the profession at large was more respected and more worthy of respect. Many are glad to join in an expression of appreciation for such a colleague and friend. Many will regret the loss in his early death; and those most keenly who had most opportunity to know the value of such a leader, advisor and friend.

WILLIAM ROBERT LOCKETT

(The following is the obituary report submitted by the Committee on Necrology of the Medical & Surgical Association of the Southwest.)

Dr. William Lockett died at Carthage, New Mexico, on Nov. 28, 1924, aged 51. He was born at Knoxville, Tenn., on Oct. 14, 1873. His preliminary education was obtained at the University of Tennessee in Knoxville. He attended the Jefferson Medical College of Philadelphia, from which he graduated in 1899. He served as interne at the Jefferson Hospital, and later on the staff of the Knoxville Hospital. He came to New Mexico in 1911, and located at Carthage, where he was the physician of the coal companies. He married Miss Gertrude Alice Rook on Oct. 11, 1904.

He was a member of the New Mexico Medical Society and the Medical & Surgical Association of the Southwest; also of the W. W. Keen Surgical Society and the Wm. S. Forbes Anatomical League at the Jefferson Medical College. He was a Mason and an Elk. He is survived by Mrs. Lockett and one son, William Robert, Jr.

MEMBERS NEW MEXICO MEDICAL SOCIETY:

According to our by-laws, the annual dues for the year 1927 are now due and payable.

When you see this in Southwestern Medicine do not lay it on the shelf to be looked after some other time.

We are all prone to forget, and while forgetting, provided you do not forget too long, does not cost you anything, still it puts extra work on the secretary and extra expense on the society when direct notices have to be sent.

I trust that every one will take this as a direct request to get in touch with the secretary of your county society at once and see that your dues are liquidated.

To those who are members "At Large" send your check for the State dues, \$5.00, direct to me.

By doing this you obviate the necessity for personal requests.

Please attend to it at once and oblige,

C. M. YATER, Sec'y.
Roswell, N. M.

DIPHTHERIA IN NEW MEXICO

Just as we go to press, the Bureau of Public Health of New Mexico reports to us the figures on "Seven Years of Diphtheria" in that state. During the five years from 1920 to 1924, there was an average of 1010 cases of diphtheria a year, in New Mexico, reported to the Bureau. In 1925, this incidence dropped to 231 cases, and in 1926 to 208 cases. This remarkable drop is ascribed entirely to the use of toxin-antitoxin.

Guadalupe County and Valencia County which had, respectively, 27 cases and 78 cases a year during the five year period, were entirely free from diphtheria in 1926, neither county reporting a single case. In these two counties toxin-antitoxin has been used persistently, each annual new increment of school children being vaccinated.

In Arizona, very excellent reports have been made personally to the editor by Dr. Platt, of Graham County, who has practically abolished diphtheria from the schools of which he is school physician. So noticeable has been the result of this vaccination, that the parents and school trustees are now importuning him to vaccinate the entire school population against scarlet fever, and, at last reports, he was just starting this work in some of the schools.

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ST. JOSEPH'S HOSPITAL (Phoenix) STAFF

December, 1926, Meeting.

The regular monthly staff meeting was held on December 13th, with thirty-eight members present.

The first study was on a group of two cases presenting symptoms of lesions in the head.

CASE 1.

DR. MORTON KIMBUL presented a history of this case, with the statement that the diagnosis was still undetermined, and could not, therefore, be very profitably studied:—

DR. J. J. McLOONE, who saw this patient in consultation, stated that there was evidence of radical mastoid operation on left and simple on right. The pain she complained of was hard to differentiate from sinus involvement. There was small amount of discharge but no evidence of necrosis in the middle ear and no dehiscence. She had an acute ethmoiditis, but x-ray examination showed no gross sinus changes. In cases where a radical mastoid operation has been performed and there is recurrence of the discharge, this may be due to an open eustachian tube. The possibility of brain complication was investigated; spinal fluid was normal; there was no evidence of sinus thrombosis. Temperature was of the septic type but do not think the pathology was in the ear. The diagnosis was a simple otitis media possibly resulting from open eustachian tube and ethmoiditis; believe we could rule out any intracranial complication due to mastoid disease.

CASE 2.

Presented by DR. E. L. CHRISTENSEN:—Student nurse, aged 19, has been complaining of occipital pain and dizziness with discharge from left ear; has previously had a radical mastoidectomy. For the last year has complained of dizziness with unsteady gait; dizziness seems to be more noticeable when lying down.

Pupils react to light and accommodation; nystagmus rotatory when patient looks to right, left and down; more marked when she looks to left. Purulent exudate from left ear; eye grounds normal; Romberg's positive; sways to left when walking.

This patient was put to bed where she has been for the past month; during her stay in bed she began to have emesis, with aggravated occipital pain and began to feel more dizzy. Two spinal punctures were done, with practically negative findings; she felt better after the spinal punctures, headache being relieved and dizziness cleared up. Along with the headache and dizziness, the pulse dropped to 55, suggesting possible intracranial pressure; temperature was 96.6. Her retinal fields were always negative and caloric tests have been negative, though we today produced nystagmus by caloric test. Diagnosis of acute labyrinthitis has been made, though there is still possibility of brain involvement. We were surprised to find tubercle bacilli in smears from the ear; it may be an old tuberculous process from the mastoid.

Discussion of these two cases was by DR. H. T. BAILEY as follows:

Labyrinthitis is classified into (1) circumscribed; (2) serous; (3) purulent; (4) perilabyrinthitis.

Circumscribed labyrinthitis is found mostly in cholesteatoma and in the beginning of tuberculous. The pathology is an erosion of a part of the labyrinthine capsule, causing a sequestrum or osseous defect. The process may be local but usually there is a membranous labyrinthitis with it. This may show fistula symptoms or it may be found accidentally at a radical operation. It is found this way when the surgeon does not regu-

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have since followed in his footsteps that the timely and judicious use of diathermy in correct quantity and quality promises much in the handling of pneumonia, by far the greatest scourge of winter diseases.

"Therefore, diathermy becomes a method of applying heat internally and it shares to a much higher degree the virtues which heat applications have enjoyed for several centuries. Poultices, fomentations, blisters, hot-water bags and similar home methods for applying heat have been in use for ages, and while these rather crude ways of furnishing heat have been attended with recognized success, it has not been possible before the introduction of diathermy to administer heat to a considerable depth and for any desired regulation of intensity over short or long periods of time by means of an external physical agency."

—from "Light and Health—A Discussion of Light and other Radiations in Relation to Life and to Health," by M. Luckiesh and A. J. Pacini.

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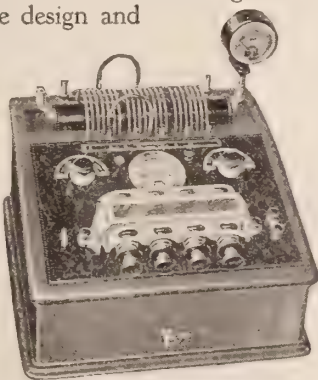
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larly make a fistula test before operating. The patient would have nystagmus to the same side, vertigo, nausea and vomiting. This would be increased or brought on by sudden head movement. Hearing, as a rule, is good, rotation positive, caloric positive, fistula test positive.

Serous labyrinthitis may follow circumscribed labyrinthitis, radical mastoid and suppurative middle ear processes. A suppurative at the oval or the round window will cause a swelling and infiltration with a fibrinous deposit on the internal surface of the membrana tympani and the annular ligament of the stapes. This causes a dilatation of the labyrinthine blood vessels and an increase of perilymph which, in turn, causes a sudden onset of marked vertigo, nausea, vomiting and nystagmus away from the diseased side, impaired hearing to deafness. Patient usually partially regains the hearing.

Purulent labyrinthitis is an infective process of the whole labyrinth and may be manifest or latent. The infection may enter through the oval window, round window, through a fistula in promontory or any part of labyrinthine capsule, or it may be secondary from a meningitis or may result from a septic embolus in the internal auditory artery. Usually it comes from a suppurative otitis media. This causes deafness, nausea, vertigo, vomiting and nystagmus to opposite side. Patient usually lies on the well side; has one or two degrees of temperature and labyrinthine tests are negative. If the patient gives a history of manifest labyrinthitis and now has deafness and tinnitus, it has become latent; yet labyrinthine tests are negative.

Perilabyrinthitis, as its name implies, means an inflammation around the labyrinthine capsule. It occurs after a radical or simple mastoid operation. The patients have a mild vertigo and are not likely to have vomiting. If they are requested to hop forward or backward with closed eyes, they have a tendency to fall. Mild nystagmus to either side may be present, but usually to the involved side; hearing is not affected; caloric or rotation tests are normal or increased; fistula symptoms are negative. Treatment is expectant, with bromides and pilocarpine.

I would consider the case under discussion one of perilabyrinthitis, and congratulate the doctors on their treatment.

DR. YANDELL:—Would like to know the amount of deafness or condition of hearing in the first case and whether the Eustachian tube really was open. Ans. The tube was open; her hearing was approximately ten feet for the ordinary voice.

DR. McLOONE:—Fields mean nothing in cerebellar abscess; in temporo-sphenoidal abscess they may mean something. In this case we can rule out temporo-sphenoidal abscess by the absence of mental symptoms and by the fields, but one of the most difficult things is to exclude cerebellar abscess, as the symptoms are too much alike. The fact that she is apparently getting well helps some, but today she gave bizarre responses to the caloric and chair tests.

The second group of cases consisted of two interesting records of variance between pre-operative and post-operative findings, in which the surgeon recorded these variations with unusual frankness. Presented by DR. GEORGE E. GOODRICH:

Case 10041, married woman, age 36; last menstruated six years ago just before an operation when both ovaries, one tube and appendix were said to have been removed. Has had four preg-

nancies, two of them premature and two at term, all stillborn.

About three years ago developed sharp pains across lower abdomen; these would come at intervals of three or four months, lasting about a week at each time; middle of last August noticed vaginal discharge which would become worse at night; about September first, this became streaked with blood and gradually increased in amount.

Physical examination was negative, except for tenderness in lower right quadrant. Bimanual negative. Inspection of cervix showed a bloody purulent discharge coming from the cervix; cervix was slightly inflamed but otherwise normal.

In view of her age and history, thought this was an endometritis, and surface was cauterized with electro-cautery prior to entering the hospital; it improved but did not get well; that was in August; did not see her again until October, when she was having a pain in the lower right side. Would have considered this a mild attack of appendicitis, but she insisted the appendix had been removed. Discharge was still present, though cervix looked better. She entered the hospital in November for operation, which was to be exploratory, with possible diagnosis of carcinoma of uterine body.

Operative findings were heavy omental adhesions to the uterus and floor of pelvis; uterus was infantile in size, normal to feel; no fibrosis nor malignancy; tubes and ovaries both gone; appendix moderately inflamed; gall bladder was palpated feeling normal, without adhesions.

Postoperative Diagnosis: — Endometritis and Chronic Appendicitis.

Pathological Report:—Chronic Appendicitis.

Case 10012, married woman, age 64. Was in an auto accident nine years ago when she was in-



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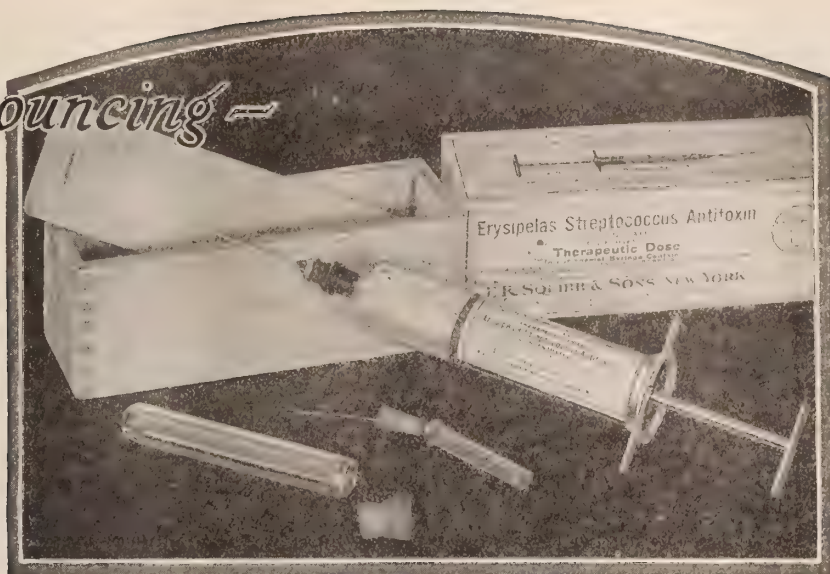
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jured internally and had two abdominal operations subsequently; menopause 17 years ago. Has not been well since her operations. She thinks her present illness is due to eating some spoiled food some months ago, since which time she has suffered from digestive disturbances, a feeling of continual pressure in the abdomen with more or less constant pain.

Only point of interest in physical examination is that the uterus is retroflexed, fixed in the culdesac, with a mass in rectum, and cystocele.

Pre-operative diagnosis of retroflexed uterus, possibly malignant.

Operative Findings: Tumor about the size of a small orange in sigmoid flexure, fastened down by adhesions; the uterus not involved in the tumor. Anterior colporrhaphy and high colostomy performed.

Post-operative Diagnosis:—Sigmoid cancer.

A group of three cases, illustrating encephalitis and allied conditions, were presented as follows:

Case 9986, by DR. GEO. M. BROCKWAY: Old man, age 76, was riding in a car on afternoon of admission, when he felt faint and dizzy and a few hours later was unconscious, with stertorous breathing and convulsive twitching.

Vigorous appearing old man, with normal temperature, pulse 96; B. P. 150 Syst., in coma. Pupils react to light and accommodation; teeth had all been extracted; no rigidity of neck; lungs negative; blood vessels very prominent; heart beat intermittent every fourth beat, with mitral regurgitant murmur. Twelve ounces of urine secured by catheter. Sp. gr. 1015, albumen positive, sugar negative, no casts, occ. r. b. c. White count 13,600, 93 percent polys. Wassermann negative (No blood chemistry done).

When brought into the hospital was given sodium chloride and magnesium sulfate, with glucose intravenously, with proctoclysis of glucose and soda. After a few hours he began to sweat and had one short convulsion. First evidence of returning consciousness occurred in the afternoon; he became very restless; the following morning he regained consciousness rather suddenly; urine had some albumen but thirty-six hours later this had disappeared. Staid in the hospital five days. Left the hospital with actual diagnosis undetermined.

Case 9881, young single man, age 23, with family and past history negative. Four weeks ago he developed a severe headache which persisted for three days without relief; then he became dizzy, was nauseated and vomited; could not retain food; headache lessened in severity but he has never been free from dull aching.

Temp. 100.2, pulse 90. Well nourished man, apathetic and slow in response to questions; slight mumbling. Pupils react normally. Head, throat and chest negative, except for a few mucous rales throughout both lungs. Heart and pulse normal. Tremor of hands when extended; no Babinski; no Kernig.

Urine negative; white count 9,200; Widal reactions all negative; blood culture negative; spinal fluid cell count 100 cells, nearly all mononuclears; no increased protein; Wassermann negative.

Dr. Schwartz, in consultation found no diplopia, with normal responses in eyes; disc normal. Examination was negative.

This patient was found on the street; by the time he reached the hospital he was very somnolent and apathetic; was diagnosed encephalitis because of certain things he did not have as well as those that he did have. Much of the time when he was not restless he would be lying with half

closed eyes, murmuring a little and when asked a question, he would respond when you would hardly expect, from his appearance, to get a response.

Patient was kept under eliminative treatment and discharged after one month in good conditions, with instructions to go to camp and rest.

Case No. 9945, married man, age 37, with negative family and past history. One year ago, patient complained of severe and continuous headaches and had several convulsions. He was treated in Alabama for "infection of the brain" and recovered sufficiently to do light work, though the dull headache continued. A week ago he drove his car from Alabama to Phoenix. The day previous to admission the headache was more severe and he lapsed into semi-consciousness, but had no convulsions. Has had stomach trouble for four or five years.

Poorly nourished man, with normal temperature, pulse 60, B. P. 118/66, semi-conscious. Pupils react slowly to light and accommodation; no rigidity; lungs and heart findings negative; Kernig's sign marked.

Urine, three specimens; Sp. gr. 1008 to 1014; albumen pos.; no casts; pus and r. b. c. White count 19,600, 88 percent polys.

X-ray examination of skull and sinuses negative. Neurological examination by DR. H. P. MILLS: On standing with closed eyes, there is marked swaying, but would not consider as typical Romberg; pupils equal and react slightly to light; no paralysis of eye, face or other muscles; deep and superficial reflexes present and normal. No ankle clonus, or Babinski. No definite tremors or speech defect. Upon most subjects patient is rational and shows no definite memory defect, except for periods during present illness. No evi-

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dence of delusions, but shows evidence of visual hallucinations and says that he sees double at times. Orientation probably correct for time, place but shows some confusion of persons.

Opinion that evidence points to encephalitis or some type of toxemia.

Wassermann reactions were negative on blood and spinal fluid. Blood chemistry showed Urea N., 20 mg. NPN 35 mg.; chlorides 690 mg., cholesterol .10 percent; sugar .15 percent.

Patient recovered and left the hospital after three days. Was re-admitted two days later, unconscious; he regained consciousness after two days but with loss of vision.

Examination by DR. J. J. McLOONE:—External strabismus of right eye. In fundi of the eyes, the disc veins are engorged, arteries pale and tortu-

ous; disc margins and other fundus details normal. Mental condition precludes accurate visual tests; however diplopia seems to be present.

Patient was taken back to Alabama and lost sight of.

Discussion of the above three cases by DR. KIMBALL BANNISTER:

In the first case, the information is so meagre that it is useless to discuss it. Have no information about his previous condition. He may have had a slight hemorrhage or thrombosis which cleared up. In all probability it was uremia.

The second case would fall in the class of lethargic encephalitis. You do not always have all the symptoms (see below). This man certainly had lethargy with consciousness; that has been a marked symptom in some cases; the pa-

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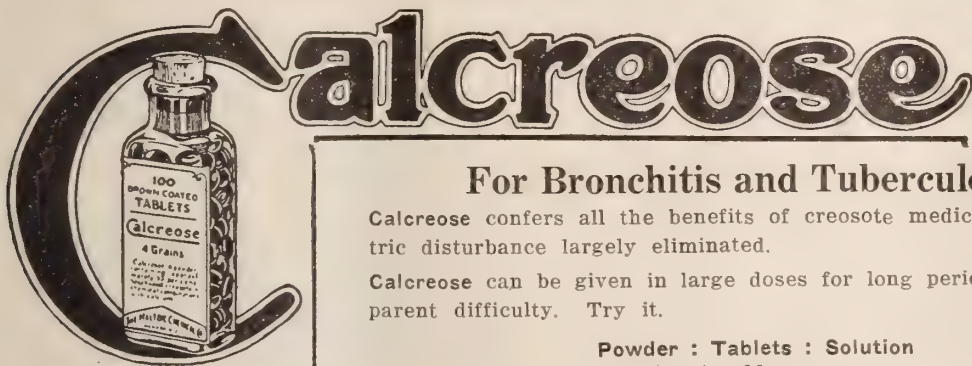
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tient looks like he is unconscious but if you ask him a question, he will answer but answer slowly with great effort; this would seem to fall in this class. The spinal fluid findings are not those of meningitis and might easily be those of encephalitis.

The third case, the man from Alabama, had a number of the classical symptoms of encephalitis. He had marked swaying; pupils were sluggish; reflexes were present and normal; he had considerable mental incoordination; was rational when questioned and showed no definite memory defect; sees double which is one of the most frequent and constant signs; had some confusion as to persons; had history of similar condition in Alabama; gets well and goes out and has relapse, which is a very frequent thing in encephalitis.

Dr. Bannister presented the following brief outline of our present concept of encephalitis:

Definition—By the term "Encephalitis" we mean an inflammation of the encephalon or brain.

Varieties—There are a number of rather well-defined varieties of this disease depending largely upon etiologic and pathologic bases.

I.

Purulent meningo-encephalitis is the first of these and the one most frequently met with in practice.

Pathologically this is characterized by a purulent exudate at the base of the brain very frequently accompanied by necrotic areas in the brain substance. May develop into the common brain abscess.

Streptococcus infection of the middle ear and the sinuses is the most frequent positive factor. Sinusitis and tuberculosis are also at fault at times.

The symptoms usually begin more or less abruptly with a chill. This is followed by constant and increasing attacks of vomiting, high rise in temperature, local or general convulsions, occasional rigidity usually an optic neuritis with a choked disk, and as late symptoms, stupor, excitement, coma, and paralysis.

The course is usually fulminating with death supervening in a few days. Occasionally it becomes chronic with periods of remission and exacerbations.

This condition must be differentiated from brain abscess which is usually insidious in its onset and is attended with focal symptoms of rigidity and focal convulsions; from brain tumor in which, like abscess, the history and the course together with the absence of a causative infection usually make differentiation easy; from hemorrhage and uremic state.

The prognosis is always grave and depends largely upon accurate localization and early surgical treatment, there being no medical treatment of value.

II.

The next most common type in encephalitis is the acute hemorrhagic form, in which there are hemorrhagic areas with leukocytic perivascular infiltration scattered throughout the brain substance.

The etiology in this case is some acute infection. Those most commonly found are measles, pneumonia, la grippe, whooping cough, erysipelas, scarlet fever. Sometimes it is thought to be purely a toxic condition, while with others it is thought to be bacteriologic.

The symptoms of this condition are severe headache, early vomiting, convulsions and delirium, extreme prostration, ending in coma, and in nearly all cases, death.

This condition can not well be differentiated

from meningitis, even the fact that it supervenes in the course of a general infection, is not distinctive, because we sometimes get meningitis also.

Treatment is futile.

III.

In acute anterior polio encephalitis, there are necrotic spots in the motor areas of the cerebrum attacking the nuclei of the upper motor neurons.

The etiology is probably the same infection but with a different localization as anterior poliomyelitis. It is frequently seen during epidemics of the latter disease.

These are usually spastic plegias without muscular atrophy. The course parallels that of infantile paralysis, and if there is recovery they are left with paralysis, spastic in type.

The treatment is the same as for anterior poliomyelitis.

IV.

In acute superior and inferior encephalitis acute destructive processes localize in the gray matter about the aqueduct of Sylvius and the gray matter in the third ventricle in the superior form, and in the floor of the fourth ventricle in the inferior. In the latter region it is practically acute bulbar palsy.

The symptoms of the superior form result from destruction of the third nucleus. Accordingly eye symptoms and paralyses predominate. In the inferior form, paralyses of the tongue, the muscles of mastication and deglutition occur.

Diagnosis depends upon the nuclear paralysis. The treatment is purely systematic and expectant.

V.

Epidemic lethargic encephalitis was first described following the pandemic of influenza in 1890

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and 1895, and again brought to public notice following the pandemic of 1917, 1918 and 1919. The influenza germ or one attending it in influenza is probably the causative factor.

Post mortem examination shows but little to the naked eye; microscopically there are chiefly perivascular infiltrations, most marked about the nuclei of the motor nerves of the eye of the pons, medulla and gray substance of the ventricular walls.

Headache, severe and constant, is always met with; extreme lassitude and somnolence quickly supervene; there may be vomiting, frequently vertigo; and there may or may not be fever. Delirium and coma are frequent in severe cases. Of the objective signs those centering about the eye are most important and diagnostic. Very early a dimness of vision is noted; in nearly all cases diplopia is a constant sign, ptosis is also nearly always met with, immobility of the eye ball is common; tremor of the extremities is frequent; meningitic symptoms, if present, are usually slight, lumbar puncture reveals a clear fluid with few, if any, findings. This is usually protractive with remissions.

Until recently mortality of this disease was about fifty percent. More recently most cases are recovering.

Treatment is specific. Convalescent patient serum injected intramuscularly in the amount of 60 to 100 c. c. has cured 27 out of 28 cases. The using of anterior poliomyelitis hors eserum, 20 to 30 c. c. intravenously and repeated has caused recovery in 23 of 30 cases. The intravenous using of the salicylates, sodium iodide aoriflavin and mercurochrome has been attended with good results.

General treatment consists of complete rest, ice pack at the head, drainage of the spinal canal,

if indicated, and nutrition. Patient should be warned that a complete recovery is somewhat problematic within an extended period of time, and as relapses are not infrequent a hypochondriac has followed numerous cures.

The program having been completed, the chairman, Dr. Wylie announced that this being the annual meeting, the election of officers for the ensuing year was in order. The balloting for officers resulted in the election of the following:

Chairman:—Dr. Willard Smith.

Secretary:—Dr. W. W. Watkins.

Members of the Advisory Committee: C—Dr. Robt. W. Craig (Surgical Group).

Dr. E. Payne Palmer (Surgical Group).

Dr. Kimball Bannister (Medical Group).

Dr. Frank J. Milloy (Medical Group).

Dr. J. J. McLoone (Specialty Group).

Dr. Fred Holmes (Specialty Group).

In closing the meeting, Dr. Wylie expressed his appreciation in being honored with the chairmanship of the Staff since its organization several years ago, and his thanks for the cooperation of the staff members during the trying years of organization. He asked that the members would cooperate just as cordially with Dr. Smith during the coming year.

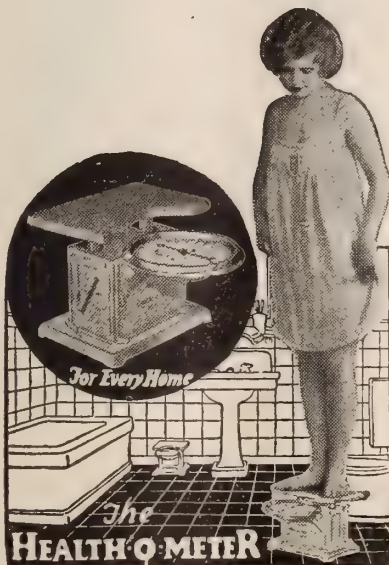
Adjournment at ten o'clock.

W. WARNER WATKINS,

Secretary.

At a subsequent meeting of the Advisory Committee, held on December 18th, this committee was completed by the appointment from the hospital management of Sisters M. Ignatius and M. Aloysius, to represent the hospital management.

The Executive Committee for the year 1927 will consist of Dr. Willard Smith (chairman), Dr. E.



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Payne Palmer, Dr. Kimball Bannister and Dr. Fred Homles, with Sister M. Ignatius.

The Executive Committee will have general supervision over all work in the hospital and the reviewing of records, as well as providing the material for the staff conferences.

SANTA FE (N. M.) COUNTY DOCTORS TO ENLIST AID OF LOCAL ORGANIZATIONS FOR CLEAN-UP OF CITY SANITARY CONDITIONS.

At the November meeting of the Santa Fe County Medical Society, held at St. Vincent's Sanatorium, November 9, it was decided that the Society shall endeavor to enlist the support of various local organizations, such as the Chamber of Commerce, Women's Board of Trade, Rotary and Kiwanis Clubs, in a campaign to improve local sanitary conditions.

Betterment of sanitary conditions will be advisable for many reasons; but it is urged primarily to control the troublesome epidemics of dysentery, probably largely of the bacillary type, which are prone to seize the city each summer, varying with the incidence of flies. The campaign for clean-up will be primarily one to prevent fly-breeding and fly infection.

With the recent advancement of Santa Fe as a tourist center, in the opening of the Harvey Indian Detour and the establishment of La Fonda as a hotel in the great Fred Harvey system, it becomes imperative to minimize this summer complaint and thus to avoid having the city acquire a bad name as a place of summer residence or visiting at that season.

At this meeting a Massachusetts General Hospital case was also read and discussed.

Scarlet fever, its prevention and treatment with toxin and anti-toxin, formed the principal topic at the December meeting of the Santa Fe County Medical Society, which took place at St. Vincent's Sanatorium, Tuesday evening, December 14.

Dr. George Luckett, director of public health for New Mexico, and Dr. Harry Mera, Santa Fe county health officer, presented facts concerning these new remedies and their use experimentally and otherwise. All preparations of scarlet fever toxin and anti-toxin on the market have undergone inspection by the Hygienic Laboratory of the U. S. Public Health Service and their value established.

No standardization of the unit of skin dosage has yet been established, and so the various preparations differ in the statement of their potency, although this potency may be practically the same in all. The toxin is used prophylactically, to establish immunity to attack. The anti-toxin is used in the early days of the attack and should hasten convalescence and control sequelae.

Dr. James A. Rolls presented a list of questions that are asked of physicians daily in their rounds. In discussing these questions, it was brought out that the quarantining of scarlet fever cases now differs from the old-established custom, in that the patient is no longer kept isolated until desquamation shall have ceased altogether. As soon as the symptoms disappear, and there is no longer nasal or oral discharge, the patient is released.

This practice has led some health officers to claim that epidemics are thus fostered; but the claim is undoubtedly due to the incidence of carriers, which do occur, and which are impossible to detect with the ordinary laboratory procedures. This is due to the difficulty of preserving swabs from the nose or throat for culture, owing to the delicacy of the causative streptococcus.

Transmission by a third party who is not a carrier is, perhaps, possible but not usual when ordinary precautions are observed. Nevertheless, the nurse or attendant on a scarlet fever case is kept isolated as well as the patient; and if school teachers or milk handlers are in the family, they, too, are held in quarantine, as well as non-immune children. It has been shown that the organism of scarlet fever grows well in milk, and transmission by infected milk has been proved.

Some two percent in diphtheria and twenty percent in scarlet fever fail of prophylactic immunization, when the toxin is used. This is thought to be due largely to an existing anti-toxin in the subject that neutralizes the toxin injected as preventive. An inefficient dose of the anti-toxin may but lower the general resisting powers, and thus be followed by an exceptionally severe case of scarlet fever. Some claim that cases treated with anti-toxin may fail to develop the natural antibodies and thus fail to be immune following the attack. This is not established.

New York City probably now has the best data on the control of scarlet fever by using the new treatment, as the use of scarlet fever vaccine there is practically a routine measure. Santa Fe physicians report generally favorable results from using the preparations.

In reply to a question, Drs. Luckett and Mera outlined the plan of the U. S. Public Health Service. It is an outgrowth of the official smallpox vaccinators, established by Congress in 1791. It became a medical detachment of the U. S. Marine Corps, and is under the secretary of the navy. Its early duties were to establish marine hospitals in the United States. It now exercises a quarantine patrol at all United States ports, controls the interstate shipment of biologicals, licensing



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The Public Health Service does not ordinarily engage in work in a state unless requested to do so, or for purposes of research, or in an extraordinary condition, as when a state-wide epidemic threatens an adjoining state.

Dr. D. B. Williams and Dr. Joseph Foster were chosen to succeed themselves as president and vice-president of the county society. Dr. Leigh K. Patton was elected secretary-treasurer to succeed Dr. H. S. A. Alexander, who has held this post for nearly four years.

DEACONESS HOSPITAL (Phoenix) STAFF MEETING

(December 27, 1926)

The Medical and Surgical Staff of the Arizona Deaconess Hospital met Monday evening, December 27, 1926, at 8 P. M., with 35 in attendance.

The minutes of the last council meeting were read.

The Records Committee reported upon three deaths which had occurred during November.

There have been three deaths during November, as follows:—

Case 6714, married woman, age 62, entered October 11th, dying Nov. 2nd, with diagnosis of nephritis and myocarditis.

Case 6817; man, age 62, entered Nov. 11th, with diagnosis of hemophilia.

This case was referred to the Diagnostic Committee for criticism of diagnosis.

Case 6729, man, age 67, entered Oct. 2nd. Patient was said to have enlarged prostate and cystotomy was performed; immediate cause of death was not given in record.

Dr. Bannister of the Diagnostic Committee reported upon the cases referred to that committee by the Records Committee as follows:

Case 6817; Diagnosis—Hemophilia. Hemophilia is properly defined as an hereditary tendency to hemorrhage in the male. The cardinal symptoms are bleeding in the male sex, with a family history and past history of the same condition. The tendency is transmitted only by the female, although there are no authentic cases of this condition in the female sex. In this particular case, the bleeding started from the extraction of teeth, in a male, age 62. Coagulation test found incomplete in 10 minutes. Man died thirteen days after entrance.

His past history was negative. Besides the diagnosis of hemophilia, he had a large abdominal tumor involving the liver, a general arthritis, and an acute endocarditis. The doctor in charge thought the hemophilia was probably due to the malignant condition in the abdomen and to the endocarditis. As I have explained, these can not be considered causes for hemophilia.

Case 6851, male, age 44, American. Entered Nov. 1st. Diagnosis of typhoid fever. Chief complaint: Pain in abdomen, in the region of the appendix, later a pain in chest, which he had been told was pleurisy. Past history of typhoid nine years previously and malaria 12 years ago and frequent attacks of pleurisy. The only notes under examination besides negative, are: Pulse rapid and weak; abdomen: some distention and slight tenderness. Diagnosis—Typhoid.

White blood picture, perfectly normal. Widal, negative to typhoid and paratyphoid.

The temperature ranged between 99 and 103 and the pulse ranged from 90 to 120 and respiration 25 to 35. There is no indication that he had typhoid stools at any time or more than one stool per day. Typhoid tongue, typhoid

headache, rose spots, enlarged spleen, diacrotic pulse, leucopenia, are not mentioned. No mention is made of any chest findings to account for pleurisy. Diagnosis of typhoid is unwarranted.

Case 6868, woman, 37, American. Entered Nov. 19th, diagnosis: left ovarian tumor; probably omental adhesions to old operative scar. Condition on discharge: well. Operation—Left oophorectomy and release of omental adhesions.

History shows that the patient has been running a temperature from 11 a. m. to 5 p. m. daily, two degrees above normal for 18 months. General weakness and pain in the left chest. She was advised to come to Phoenix for tuberculosis. She has some pain in abdomen in the lower part with tenderness, becoming more severe at menstrual periods. History of typhoid at 17 with colitis following. She had influenza in 1918, but with no complications. Appendectomy in 1912. Menstruation irregular; she often skipped periods of several months. No pregnancies in 14 years.

Examination: Diagnosis as previously given. Chest found negative. Abdomen: shows tenderness over the right lower quadrant and the left lower quadrant and operative scar. Pelvic examination shows small tender tumor in the left adnexa with the left tube, which felt tender. There is a marked leucopenia, 38 percent leucocytes.

Operation: bilateral salpingectomy, left oophorectomy, liberation of adhesions. Findings: Double salpingitis; left cystic ovary.

Pathologist's report shows tubes negative, microscopically ovaries show marked sclerosis with small cystic formation.

History, the diagnosis of tuberculosis, the surgeon's findings and pathologists report, are all at variance and fail to show cause for a tempera-

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ture two degrees above normal running for 18 months. Temperature when she went out of hospital was normal and sub-normal since the fifth post-operative day. Diagnostic Committee suggests that an x-ray study of the lungs might have thrown light upon the condition. There was no mention of an x-ray.

Case 6877:—Diagnosis of blood poison. Patient had a crushed hand several days before entering the hospital, and now states that he has an infection. Examination shows that he had discharging sinus in the palmar surface of the right hand at base of little finger, white count, 16,000. Operated and drained. Discharged eight days after entrance. Highest temperature 100.8 on day of admission and 100.4 on second day. Normal and sub-normal thereafter. Diagnosis of palmar abscess would have been proper under operative findings noted.

The term "blood poisoning" as currently used, is synonymous with septicemia and there is nothing in the history to indicate this condition.

Case 6895: Diagnosis—Toxemia. In the progress record there are several notes of fetal heart tones and this is the only place that one finds any place that this is mentioned as toxemia of pregnancy. Should be signed out as toxemia of pregnancy.

DR. GOODRICH said that case 6868 was a most interesting case, sent here for pain in upper left abdomen. She had been sent here with diagnosis of pulmonary phthisis. Dr. Phillips had studied her carefully and found she had not tuberculosis. The preoperative diagnosis was adhesions at side of old operation scar and that these were probably attached to pelvic organ and that this accounted for the pain.

Dr. Bannister said in reply, that the diagnostic committee had no criticism of the treatment of this case, but the committee simply wished to bring out that the facts stated by Dr. Goodrich just now were not in the records and they should have been, in order that the records might give a picture of what was done, why it was done, and what was accomplished.

Case 1. Subacute Multiple Hypertrophic Arthritis

Reported by DR. BANNISTER. Married woman, age 50, developed arthritis two years ago. Teeth all extracted a year ago. On Nov. 20th, examination showed flabby, middle aged woman, B. P. 116/70, slightly enlarged heart, with systolic murmur at apex; there is deforming hypertrophic arthritis of fingers, wrists, elbows, knees, ankles and toes, all these joints being swollen and tender to pressure and movement; shoulder joints are also sore and stiff.

On Nov. 24th, after eating some chicken, supposedly spoiled, at a local restaurant, she had a severe chill, with gastro-enteritis, vomiting and diarrhea. Temperature was 104 at time of chill. She was removed to the hospital where very, very stubborn diarrhea and nausea slowly responded to treatment. On the second day in the hospital, she noticed that she could move her arms and legs with greatly decreased pain and on the third day she was suffering practically no pain in any of the joints. After a week in the hospital she could reach the back of her head with her hand and before going home she was combing her hair, which she had not previously done for two years. She left the hospital on Dec. 13th, walking without any support.

Dr. Bannister cited this case as a very good illustration of the beneficial effects of severe protein shock upon chronic arthritis. Patient has not been seen since, but this is thought to be because she continues in good health.

Case 2. Hemophilia and Endocarditis.

(See Comment by Diagnostic Committee.)

Presented by DR. HICKS:—This patient began having pain in legs about two years ago. He was treated for rheumatism for 18 months and failed to get relief. On Nov. 8th, he had several teeth extracted; on the night of Nov. 10th, he started to bleed freely from the gums.

At 2 a. m. the patient was removed to the hospital and hemostatic serum administered with adrenalin and tannic acid to gums. Hemorrhage was arrested at 8 a. m. Coagulation time, Nov. 11th, 10 min.; on 15th, 9 min.; on 20th, 5½ min.

Calcium lactate was given and patient improved rapidly. About the 20th he developed an acute endocarditis from which he died Nov. 24, 1926. Physical examination of this patient at time of entry showed large tumor extending from liver down to the umbilicus which was probably malignant. Patient had lost 30 lbs. weight in last six months. Osler's classification of chorea, Vincent's angina, tonsillitis and arthritis leaves us in doubt as to the source of infection causing the terminal disease endocarditis. It is quite possible that the malignant growth might also provide a source of infection.

Case 3. Traumatic Shock Followed by Cure of Chronic Multiple Rheumatoid Arthritis

Presented by DR. E. P. PALMER:—Mrs. E. H. H., age 53, entered the hospital on Nov. 13th, 1926, in an unconscious condition, the result of an automobile accident on November 9th.

Physical and x-ray examinations showed many contusions over the body, with multiple fractures: the left tibia and fibula; left femur; right tibia and fibula; left side of skull. There was complete right hemiplegia and paralysis of left side of the face. All the joints of both hands, wrists, elbows, with joints of the feet, ankles and knees were

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swollen, with partial ankylosis of some of the finger joints.

History: There is absence of the left breast, with scars of previous amputation. The tonsils have been removed, also the teeth. Sinuses have been opened and drained. Nasal septum has been operated on; otherwise the findings are negative. Patient has suffered from multiple arthritis since 1907, at which time she had an abscess in the left breast. In 1911 swelling began in toes in left foot and extended to right. Was confined to these joints until 1915.

The fractures of the lower extremities were reduced under the fluoroscope. Molded plaster paris splints were applied posteriorly and laterally on both lower limbs. Patient was given liquid nourishment and sufficient morphine to produce rest at night. There was a slow improvement in the mental condition, until Dec. 9th, when there was a marked improvement. General condition continued to improve and at that time she was taking a light diet. On the 11th, she became irrational and was very restless for 24 hours. The splints were removed on the 13th and the limbs examined and found to be in good condition. Large amount of callus found at the point of each fracture. Splints were re-applied after each joint in the lower extremity had been given passive motion. These joints were all found to be very much improved with very little, if any, swelling, redness, heat or tenderness. Some change had taken place in the other affected joints. All had returned to almost normal condition, except those joints of the fingers, which were partially ankylosed. On the 19th the patient's mental condition again showed a marked improvement so that she was practically normal and has remained in this condition since. She can use

the joints of the hands and wrists without discomfort, and with the exception of the partial ankylosis which persists in some of the fingers, the formerly deformed hands and wrists are now apparently normal. This patient had been given every form of treatment known to medical science in an attempt to relieve the arthritis, as her husband is a professor in a large medical school, and she has been under the care of the best medical men in order to obtain relief from her arthritis. She has spent her winters in Arizona during the past few years, with nothing more than temporary relief obtained until she received this severe injury, which has resulted in a cure of her trouble. It is not because of a change in diet, as no particular attention has been paid to the neuritis phase of her case during the time she has been receiving treatment for the fractures.

Protein shock has been used extensively with fairly satisfactory results, in rheumatoid arthritis. No case similar to this, in which traumatic shock has been followed by cure of chronic, multiple, rheumatoid arthritis has been found in reviewing the literature.

Case 4. Ankylosing Arthritis

Reported by DR. GEORGE GOODRICH. This boy's trouble began some 6 to 8 years ago with pain and swelling of the knees. This occurred after exposure to wet and cold—especially when the feet were wet and cold. He was examined by excellent men and everything apparently indicated was done. In 1924 a number of other joints became involved. In that year he developed suppurative knee joints and they were operated upon. Now the upper ends of the tibia are displaced upwards and backwards. They are not completely ankylosed. A large number of joints are affected.

He is 21, and markedly emaciated. He has some

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sort of a mental deterioration. The blood picture is of interest. The erythrocytes were around 4,000,000; the hemoglobin is 30 percent. This boy had for a time considerable diarrhea.

The review of recent literature on chronic arthritis, presented by Dr. O. H. Brown, is found in other columns of this issue.

The discussion on arthritis by DR. E. H. BROWN will be found under the Review of Current Literature, mentioned above.

Case 5.

Presented by DR. H. T. BAILEY: Baby, age two years, was admitted to the hospital Nov. 15th. While playing on the bed the night previous he had inhaled a pin. Had severe paroxysm of coughing, but after that, was quiet until the next day, when he had another paroxysm of coughing. At this time he was taken to Dr. Felch's office. After getting the history, the doctor suspected that the child had a foreign body in his lung. X-ray was taken of the chest, which showed a pin, head downward on the right side of chest, mid-way between right nipple and the sternum. Point of pin was about on level with nipple. Diagnosis was made of pin in bronchial tube, of middle lobe, on level below nipple.

Physical examination showed bronchial rales on right side. Left side clear. Heart normal, although the mother states that the child became cyanotic at times, and she thought that this condition was due to heart trouble.

At 6:00 p. m. on the 15th, under ether anesthesia, an attempt was made to remove the pin with bronchoscope, but there was so much tenacious mucus that it was impossible to get the pin, and it was not removed. Child was kept in bed in the hospital until the 19th, when, under ether anesthesia, the bronchoscope was inserted low down in the middle lobe of right lung, pin seized with forceps and removed.

Child made an uneventful recovery.

Dr. Greer said that some time ago a boy belonging to the Armory Band had swallowed a pin and expectant treatment was followed. No serious results developed. Later he was blowing on a horn and coughed and up came the pin.

Dr. Felch reported the case of a man that had a tack in his bronchus for 17 years, at end of which time he coughed it up.

Dr. Stroud reported another case of a boy that carried a nail in a bronchus for some time and eventually coughed it up.

Dr. Bailey said that often with a foreign body in the lung congestion takes place in the bronchus and later pneumonia is apt to follow.

Dr. Watkins said that the Records Committee had chosen this case to be reported upon tonight because of its unusual interest and the masterly way in which it was handled. The most difficult cases of this type that are brought to the roentgenologists are non-opaque bodies. The results are just as Dr. Bailey related. In the non-opaque bodies when large enough, a bronchus is plugged and atelectasis of the lungs results and on this

a diagnosis is made. Later the induration follows.

Dr. O. H. Brown said that back in Missouri not far from St. Louis a dentist lost his turr in a patient's mouth and the patient inhaled it into a bronchus. And an old backwoods country doctor commenting upon the case said that if he had been in charge of this case he would have suspended him by his toes and had him cough.

Dr. Tuthill was not able to be present on account of a wedding in his family and his case was not presented.

The meeting adjourned at 9:30.

ORVILLE HARRY BROWN.

Secretary.

DR. W. H. LOUNT, formerly of St. Louis, Mo., has opened offices in the Heard Building, Phoenix, where he will practice the specialty of Nose, Throat and Ear.

DR. W. H. LIVINGSTON, of Espanola, N. M., has moved to Santa Fe, where he will be located in the future.

DR. HARRY R. CARSON, of Phoenix, Ariz., has been confined to home for several weeks by illness. He has been much missed by the surgeons who have learned to depend upon him for anesthesia assistance.

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SOUTHWESTERN MEDICINE

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No. 2

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Southwestern Medicine

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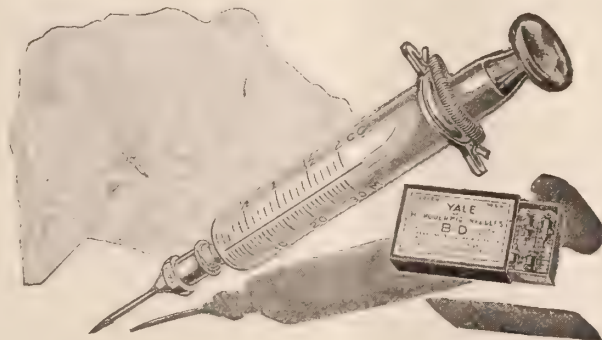
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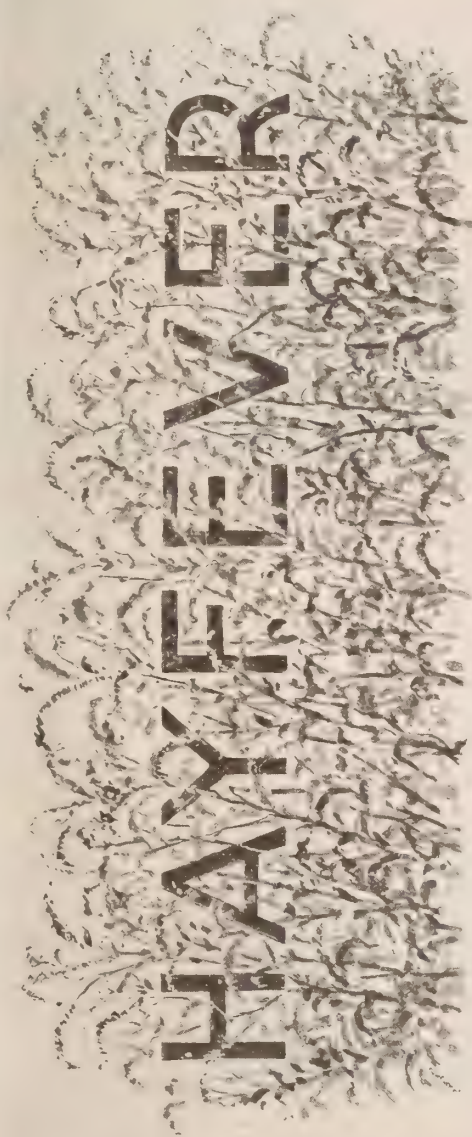
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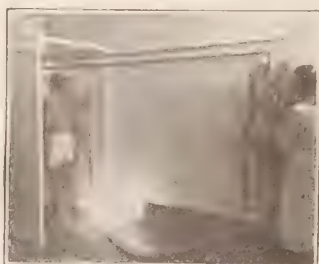


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THE PROBLEM OF CORONARY SCLEROSIS

G. WERLEY, M. D.
EL PASO, TEXAS

Coronary sclerosis differs in no way from arteriosclerosis of the aorta so far as pathology is concerned. But its consequences are vastly different. The coronaries supply the most vital organ in the body. An atheromatous projection of no significance into the aorta might readily occlude the smaller coronary vessel almost entirely. The situation of the coronaries makes them particularly vulnerable. Coming off at the headgate of the arterial system they are subject to the same stress and strain as the aorta itself, to the thrust of systole and the recoil of semilunar closure. The main branches of the coronaries lie on the surface of the heart unsupported by surrounding structures, except the pericardium. These facts enable us to understand why the coronaries are sclerosed twice as often as are the arteries of the brain, and three times as often as those of the kidneys.

The consequences of coronary sclerosis are different than in other arteries, due to certain peculiarities. The blood flow in the larger of these vessels is intermittent. There is stasis in systole and rapid flow in diastole. The nutrient arteries of the heart penetrate the muscle, generally, at right angles to the surface. They are thus clamped by the taut muscle in contraction, and the blood behind comes to a standstill. In diastole they suddenly open up and the blood goes forward under high pressure. This intermittent flow in the coronary arteries has been demonstrated in the heart

It has always been a puzzle as to why sclerosed coronaries should be so much more subject to thrombosis than are other arteries of similar size. I believe that in this intermittent flow we have a part of the explanation. With projecting banks of ather-

oma, and shelving ledges of calcified deposit, favorable to the formation of whorls and eddies, increased by alternating flow and stasis, we have ideal conditions for thrombus formation. When the coronaries are once stiffened by sclerosis we may also well believe that alternate contraction of the heart muscle during systole, and stretching during diastole, may produce the vessel trauma that is said to be necessary for thrombus formation. In addition, the heart affected by infarct is almost always hypertrophied and dilated. This theory of trauma may find some support in the great frequency of thrombosis of the anterior descending branch of the left coronary which, in its long course, winds around the apex and is thus especially liable to stretching.

The blood flow in the coronary veins is continuous and rapid both in systole and diastole, and thrombosis in them is very rare. Dr. Waite has found one case in our post-mortems. From the foregoing it will be seen that in the coronary circulation we have a very vulnerable part of the human machine. However, it repairs itself and keeps going in a most marvelous manner.

The exact cause of atherosclerosis remains unknown. But we are acquainted with some interesting facts. We know the composition of the atheromatous masses. We know that the process is not inflammatory, but one of a mechanical, chemical and metabolic nature. Just what initiates the process, we do not know. That the contents of these masses come from the blood stream, and that cholesterol is the transporting agent, seems to be established. In the form of cholesterol esters the fatty acids are deposited in these lesions. They break down, setting free pure crystallized cholesterol and soaps. The al-

kali of the soaps is later replaced by calcium and further by substitution of phosphoric acid; true bony deposit may occur.

Atheromatous changes are most common at points of stress and strain. Hence they occur about the coronary openings and also about the openings of the nutrient vessels of the heart muscle as they are given off from the coronary trunks. If one compares two opened coronaries, one healthy and the other atheromatous, he will be struck with the numerous vessel apertures in the healthy, as compared with the diseased vessel. The plugging of these small vessels by atheromata accounts for small patches of cardiac fibrosis and infarcts too small to cause clinical symptoms.

It is said that in the early stages the atheromatous deposits may be absorbed and the vessel left but little changed. The atheromatous patches found on the valves in infancy are not seen in older children². It was noted by German pathologists during the later years of the war, when fats were scarce, that atheromatous patches on the aorta were less common than in times of peace.

It has been demonstrated that the artificial atheromatosis of rabbits quickly disappears when they are again put on normal diet. These facts inspire the thought that perhaps even in advanced age some of the less sclerotic changes of atheromatosis may be amenable to treatment.

Arteriosclerosis has been produced in rabbits, guinea pigs and cats by diet, bacterial infection, drugs, and mechanical means. Diet has been the most successful. With the important work at the Santa Barbara clinic most of us are familiar³. It seems demonstrated that acid-producing foods are a factor in causing artificial arteriosclerosis in rabbits, at least, and clinical experience with Sansum's basic alkaline diet is certainly encouraging. Whether, as Newburgh, Sansum and Nuzum maintain, excessive cholesterol in the diet is not the main factor in atherosclerosis, as has been so positively asserted by certain Germans, is difficult to prove. Cholesterol⁴ is apparently a normal constituent of the blood and its sources in nature are so numerous that it would be very difficult to exclude it by diet. Its antecedent is common in plants in the form of phytosterol, and cholesterol is common in many animal tissues.

Japanese experimenters have emphasized the importance of metabolism. Murata and Katoaka⁵ found that feeding with lanolin

produced more frequent and more marked atheroma in castrated animals than in normal controls. By raising metabolism in castrated animals with thyroid, the lanolin feeding resulted in little or no arteriosclerosis. Lowered metabolism as a factor in arteriosclerosis is interesting in connection with the opinion that lack of exercise plays a part in the human type. The addition of simple fats to cholesterol cause much more rapid and marked sclerosis than when cholesterol is used alone⁷.

One fact stands out clearly in all these animal experiments, and this is that atherosclerosis in animals may be produced by food,—by diet, and diet alone. The rabbit can hardly lay it on his grandfather, or civilization, or business worries, or other common alibi.

Now let us turn to clinical coronary sclerosis. In twenty-one cases verified at postmortem by the El Paso Clinical and Pathological Society, the average age was fifty-four years. None were under fifty years. The cases of coronary occlusion under fifty were all syphilitic. Syphilis is a common cause of coronary disease, but is not considered in this paper. Our cases were all males except one. Of Heberdeen's 100 cases of angina only three were females⁶. In eighty-four cases of coronary sclerosis found postmortem at the Mayo Clinic⁸, twenty-two per cent were females. Twenty-nine per cent of their cases were obese. All of our postmortem cases were of the robust, vigorous type, and many were decidedly fat. In fifty of my own cases of angina pectoris and cardiac infarct there were ten females. As to weight, nine were over 200 pounds, one weighed 265 pounds, one 250 pounds, three over 220 pounds. Seven weighed 180 to 200 pounds and six weighed 170 to 180 pounds. Thirty-two per cent were distinctly obese. Only eight weighed under 150 pounds.

In twenty-two cases the blood pressure was 150 or above, in many very high. In three it was below 110, all cases of cardiac infarct. My notes on past infections are not complete. None, however, had had an abdominal operation. This was also true of our postmortem cases, I believe. A history of acute inflammatory rheumatism was conspicuous by its infrequency, occurring in only two cases. I am doubtful as to the influence of focal infections. Certainly such foci are often not to be found. Nearly every case reported his previous health as exceptionally good. None were of the feeble, complaining, neurasthenic type. Angina pectoris is almost unknown among

those suffering with pulmonary tuberculosis. We have found no case of marked coronary sclerosis in any case of tuberculosis at postmortem.

In reviewing the literature and my own experience, three facts appear prominent as to cause: (1) advanced age; (2) marked male predominance; (3) the vigorous over-nourished type. Apparently, feeding experiments are quite as successful in humans as in animals. As to heredity I have no complete data. In high pressure cases it seems to be a factor. There is great danger, however, in confusing heredity with habits and environment. Habits certainly run in families, especially habits of eating, and I cannot help suspecting that what is too often inherited is an uncontrollable appetite. The older writers seemed to think so.

In 1842 Tweedie¹⁰ observed: "Angina ordinarily occurs in persons of an advanced period of life, and more especially men who indulge in luxurious living and who, being exempt from the necessity of regular bodily labor, are prone to obesity; as well as from the striking benefit of depletion and reduced diet in a great proportion of cases."

In this country good living is not confined to the idle rich. The so-called laboring classes are able to enjoy angina and cardiac infarct too. I think the following quotation also throws light on the cause of coronary sclerosis. In a recent paper Joseph Pratt¹¹ said: "Doubtless coronary endarteritis and coronary sclerosis were very rare in Ireland or Stokes (Sir William, 1804-1878), one of the best clinical observers of his age, would have given us a vivid description of both angina pectoris and cardiac asthma. He says he never saw a classical case as described by Heberdeen and Latham."

Certainly Ireland had her share of tuberculosis and other infections. She certainly

had her hardships and her worries. The well-fed Englishman had his beef and his suet pudding. The Irish had famine and potatoes. This, it seems to me, fits in well with the war experience of the Germans, and with the diet experiments on animals.

Primitive man lived by the chase and had periods of feasting and periods of fasting. The deposits of cholesterol and fat due to hyperalimentation had opportunity for removal. But today, in this country at least, the vascular system must bear the stress of three full meals daily, year in and year out. There is no time for repair. The coronary arteries become atheromatous, sclerosed and worn out; and angina, cardiac asthma, cardiosclerosis and cardiac infarct too often close the scene.

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THE SIZE OF THE HEART AS AN INDEX OF CARDIAC EFFICIENCY

ORVILLE HARRY BROWN, A. B., M. D., Ph. D.
PHOENIX, ARIZONA

Any factor which may assist in rating the efficiency of a heart is, of course, of value and should be heralded widely among the profession. Simple and fundamental as are the facts to be presented, I believe they are not being made use of as generally and fully as they should be. The man-

ner in which a heart reacts to labor is the criterion of its ability to do that work.

The tests and the immediate response thereto of standing, hopping, running, of climbing stairs, etc., are of great value, but for some hearts any of these are too strenuous, while in other instances they might

not easily suffice. Pulse rate and blood pressure changes may give some evidence of the efficiency of a heart; but many factors affect pulse rate and we know all too little as yet about factors concerned with blood pressure.

The question of efficiency of hearts is not simply one of life and death, but rather one of whether the heart is being called upon to do work for which it has been inadequately trained. Americans generally are heedless about putting undue stresses and strains upon their hearts. Office and professional men generally lead quiet, drab existences, as far as physical exercise is concerned, for months at a time, and then, with no preparation in physical training go into the mountains for a day, several days or longer, and hunt and do other strenuous things suddenly and thoughtlessly. All sorts of sudden physical exertions are undertaken even by persons with hearts subjected to toxemia from various sorts of focal infections. These persons, after having undergone undue physical exertion, may then return to their regular work with no period of marked rest. What has been the result on their hearts? By going back to facts early learned in physiology I hope to provide an answer.

The heart is a chambered muscle. All muscle has a property known as tonus. Tonus of muscle may be decreased; a stretched muscle—which is one with decreased tonus—is not an efficient muscle. Every medical student has suspended a weight on the end of a muscle with the other end attached to a lever writing on a kymograph. A fatigued muscle loses tonus, is lengthened and has not the ability to do work it had when fresh. A strip of heart muscle is no exception.

A structural phenomenon unlike that in any other organ of the body exists in the heart. The nutrient blood supply of the heart comes through vessels which lie upon its external surface. Whatever amount the heart muscle stretches, the coronary arteries stretch proportionately greater. A longitudinally stretched elastic tube loses width. The cross sectional areas decrease in ratio to the decrease of the squares of the diameters. I have shown in a previous publication that a heart might not be excessively dilated to, theoretically at least, have its nutrient blood supply cut down fifty or more per cent.

A heart may be put to sufficient work to cause it to dilate; and then, unless there is an unusual rest period, such a heart starts its regular routine, for example, on fifty per cent. of normal blood supply. Unless it

has a great amount of reserve it may not be able to come back to its former efficiency, without a lapse of more or less time, or it may not come back at all without help. In many instances there is little chance of a heart's contracting to its normal size unless there is a diminution of its usual work or unless other therapy is instituted.

The grade of dilation of a heart may be anywhere from normal to extreme. The impairment of efficiency is somewhat in proportion to the degree of dilation. A heart may dilate so gradually that the stretch of the coronaries does not produce a corresponding narrowing of their diameters; or they may gradually widen so as to give a compensatory increase of their nutrient blood supply. In either event such a heart is not so efficient as it will be if it is again caused to contract and is kept at normal size. Its blood supply through the coronaries might then be greater than normal. The fact that so many dilated hearts are able to keep up a remarkable amount of work for long periods, indicates that some compensation must occur.

In the event that the coronaries are sclerosed a new factor enters. Atheroma is prone to be patchy. A vessel with sclerosed areas which cannot stretch, in the event of stretching must have other areas which stretch proportionately more. Therefore the narrowing at the stretched places is proportionately greater than if the entire vessel were stretched for an equal distance.

The long left coronary artery may help to explain why the left heart is found dilated so much more often than is the right heart. It must carry a proportionately greater amount of blood than does the right and hence, when dilated, the left heart has a poorer chance of recuperating and getting back to normal.

The etiology of cardiac dilation, as has been already indicated, is the lack of proper training of the cardiac muscle. Muscle has, in addition to the property of tonus, another property, that of developing more and more power as arise demands for more power. The one great physiological law in this connection is that the increased demands be made gradually and consistently. All muscle has a certain amount of reserve so that it can do work in excess of what it is actually trained to do. The heart which has been working for long in a dilated state has some of its reserve power used up. It is on this basis that a study of the size of the heart helps to decide upon the efficiency of that heart.

Toxic factors, such as focal infections,

tend to predispose to muscle weakness and hence to cardiac dilation. I wish to throw out a suggestion which, so far as I know, is new. The hint came from the experience with a patient who was heating her small apartment with a gas heater. She developed symptoms of cardiac embarrassment and I found her with a dilated heart. She attributed her condition to the gases from her stove. An electric stove was substituted for the gas heater and no further trouble of this sort was experienced by her.

I have been watching for dilated hearts, especially for eight to ten years, and I have sometimes feared I was finding them where they did not exist, so common have I found them. The thought has occurred to me that the carbon monoxide to which we are constantly subjected from our gasoline motors may be a contributing factor in the etiology of dilated hearts. At any rate the chronic effects of the carbon monoxide are worthy of more and serious study.

The symptoms of dilated hearts may vary from none to extreme dyspnea, cyanosis, edema and other signs of cardiac embarrassment. In cases with even moderate dilation there may be no symptoms of which the patient is conscious. After his attention is focused upon the symptoms, the patient may realize that he has had them for a considerable period. I have been struck with the frequency with which dilated hearts are found, even in those who give no histories that would point to the condition. Relief of the dilation brings relief, often, of the symptoms of which the patient has complained, which were, perhaps, only indirectly connected with the heart.

The diagnosis of cardiac dilation is not always easy. Locating the margins of certain hearts is indeed difficult. I make it a practice to utilize all the classical methods of examination—inspection, palpation, percussion and auscultation—checking the findings of one method by each of the others.

It would be presumptuous and trite for me to attempt to outline how these examinations should be made. It may be helpful, however, to suggest that inspection be made with the light reflected at various angles from the patient's cardiac area; that percussion be very, very light; that palpation be tried with the body leaning forward and with the chest in a state of extreme exhalation; and that auscultation be made on a plane with the apex beat and every cm. from near each axillary line or beyond, in, toward the heart, locating the point where there is the first sudden increase in heart tones. Examination should be with

the patient standing or lying or sitting without leaning to either side. In difficult cases auscultation for the first change from dim to loud tones is more helpful, I believe, than any of the other methods. Fluoroscopic examinations are useful in checking the results from other examinations but, of course, can scarcely be made routinely.

Differential diagnosis is not usually important. Hypertrophy rarely confuses, because it rarely widens the diameter of the heart as much as one cm. This variation in the dimensions may be safely ignored. What is true of hypertrophy is also true of fat. Differential diagnosis between dilation and pericardial effusion may at times be a question; but the signs of effusion need not be detailed here. A heart may be retracted by adhesions or forced out of position in other ways so that both margins of the heart must always be located before its size is estimated. A vertical heart may be dilated and yet its left diameter be not without average normal measurements from the median line. The physician must base his judgment as to what are normal heart measurements for the individual upon indications as to the type of the individual. The size of the fist is a good basis by which to judge. The therapeutic test may be necessary to decide definitely that a heart is or is not dilated.

Prognosis as to the prospects of life and as to the prospects of usefulness may be given with some degree of accuracy. A person with a heart which remains dilated after careful treatment, or which readily relapses after the beneficial treatment, has not the same likelihood of work or life as the person with a heart which responds to treatment or which does not need treatment.

The treatment of a dilated heart is by regulation of exercise or the administration of digitalis or by both. The ideal method is absolute physical rest with speedy digitalization; digitalis is first decreased cautiously and then discontinued as soon as it is found that the heart remains normal size without it. Exercise should then be begun cautiously and in daily increasing amounts, insufficient to again dilate the heart. By this procedure the heart should be trained up to any required work. Failure may be due to a too rapid increase of work or to a lack of come-back, or reserve, in the heart. Practically, the treatment will often consist in the administration of digitalis and regulation of exercise. Very often such a plan of treatment will have to be protracted over months rather than weeks. All grades of responses to treatment, how-

ever, will be found. It is preferable, if possible, that a person continue regular work on a heart saving schedule, plus digitalis and supervision than that all work be stopped. The psychic factors should never be ignored.

The results of treatment are often most gratifying. Palpitation, arrhythmia, precordial pains, dyspnea, cyanosis, etc., are a few of the symptoms that are often benefited by proper attention to cardiac dilation. Other symptoms, not apparently connected with the circulation, are often improved by treating a dilated heart.

Occasional examinations after there has been a complete return to normal, should be the rule. The aged need more frequent examinations, as a rule, than do the youths. When the heart has been sufficiently improved, attention should be given to sources of toxemia. These should be eradicated but in a manner not to put further serious strain or stress upon the heart.

SUMMARY

Dilated hearts are frequently found if patients are carefully examined for them. A dilated heart is not as efficient as is that same heart when not dilated.

The chief cause of cardiac dilation is doing work for which the heart muscle has not been sufficiently trained.

Predisposing causes are toxemias. Focal infections are common sources of chronic toxemia.

DISCUSSION

(Papers of Drs. O. H. Brown and G. Werley.)

DR. W. WARNER WATKINS (Phoenix), opening:—If you are going to determine the efficiency of the heart by its size, fluoroscopy is indispensable. I recall a paper by an eminent clinician of Tulane University, a year or two ago, in which he stated that not only could the size of the heart be determined within one centimeter of its transverse diameter by percussion, but that the heart could be distinguished from pericardial fat by the same means. I do not believe the ordinary clinician can do either of these things. It is a daily observation with us to check the heart size of patients whose percussion findings have indicated enlargement, and fluoroscopy shows normal size. Just a day or two ago a man was sent to our laboratory with request to determine the degree of enlargement. The patient was a large man with heavy chest, and the heart was almost infantile in size, much smaller than normal.

We do not believe it is reliable or accurate to use figures in estimating whether a heart is enlarged or not. The normal heart will vary widely in its transverse diameter, depending upon the size and shape of the chest cavity. We have seen an underweight patient, whose diaphragm was low and the heart somewhat pendant, show transverse diameter of not more than twelve centimeters; and three months later, when he had put on weight and his diaphragm had been pushed up, his heart was more transverse and measured 15 centimeters, and it was doubtless exactly the same size heart. When comparing figures, the relation

of the heart to the thorax, the build of the patient, and other anatomical factors must be taken into consideration. We always supplement our figures by the statement that the heart is normal in size or abnormal in size for that particular patient. A transverse diameter which would be perfectly normal for a large man would mean a decidedly enlarged heart for a small man.

DR. S. D. SWOPE (Chihuahua, Mex.):—I would like to add a little matter of experience bearing on these two very excellent papers. In the first place, in the examination of over two thousand laborers in the last two years, belonging to our Mexican population, I have discovered the largest percentage of rejections for physical incapacity have been due to valvular lesions of the heart. The time allotted for this work prevents us from being able to make an exhaustive examination, and they are rejected rather summarily for this symptom.

A few months ago, I had the misfortune to be almost asphyxiated with carbon dioxide gas. My nurse and myself were attending an obstetrical case, and we discovered we were becoming lethargic. The pains of the prospective mother had practically ceased, and it suddenly dawned on me we were being poisoned with carbon dioxide from an open charcoal burner in the room. The patient was moved and the pains commenced again. Our muscular incoordination was quite noticeable. In attempting to write, I found my muscles would not respond to the inclination of my brain at all, and I was practically unable to write my name, although I was not drunk, but I could not control the action of the muscles, and in walking I had the same sort of difficulty. This passed off and all hands recuperated after a short time.

I had a man who was completely asphyxiated with carbon monoxide. This man's heart beat for an hour and a half after this experience. He was probably in the smoke for fifteen or twenty minutes. There was no muscular action over his body anywhere, the heart was very slow, and there was no pulse discernible. We worked with him and gave him the ordinary artificial breathing, and the heart continued to beat for an hour and a half after we began working on him. The muscular action of the heart was very feeble, and continued to grow more feeble, until finally it stopped altogether. The respiration had stopped sometime before that.

DR. ORVILLE EGBERT (El Paso):—It is seldom that two papers on a program are so well correlated as the two last papers, as to give those of us so fortunate as to hear them such splendid instruction. It is as interesting a program as I have listened to.

From the standpoint of heart examination, following Dr. Watkins' discussion, I would like to hold up the end of the clinician a little. In perceiving that heart and outlining it, I will agree with him that numerical measurements are inaccurate, because they may not take into account the relative size of the individual, and the measurements as outlined by percussion and the measurements as outlined by fluoroscope are both variable.

Someone at the University of Pennsylvania has developed a very complicated piece of electrical mechanism that I know nothing about, other than to say that in some sort of fashion, like in radio frequency, he has developed the electric impulse of the heart to where it is strong enough to trip his trigger and snap the electric plate, and he can, by changing his instrument, take the picture either in systole or in diastole, which does make for accuracy of measurement, but as the heart is in

action under the internist's percussing finger, I believe the relative measurements vary as much from the clinical standpoint as the other.

DR. O. H. BROWN (Closing): I wish to say just a word in appreciation of Dr. Werley's splendid paper. I have heard him several times, and it seems every time I have listened to the master speaking. He sent me a copy of the paper beforehand, which I appreciated very much indeed. He emphasizes the importance of diet, and I believe that as we grow older in the practice of medicine, we realize the importance of diet not only with the heart, but in other conditions. The objection is that there is so much poppy-cock about diet these days that this over-emphasizing it may run us into further danger. It is a question of learning facts and teaching them generally to patients and one another. I counsel against ignoring focal infections, even though you cannot see a definite connection between them.

The question of the fluoroscopic examination of the heart is, I think, extremely important. Dr. Watkins, I do not believe, would make as all x-ray men, but he would have us give some thought to the inaccuracies of our clinical measurements and examinations. Be as careful as we may, we cannot be correct constantly, but the proof of the pudding is the eating; take your patient and put him under proper treatment and see if you get response, and that can be found time and time again. I would, in that connection, emphasize what I tried to say originally, that this is a condition that happens so frequently that unless you have your fluoroscope handy all the time, patients will not be able to get out to the fluoroscope. You find dilated hearts many times with a very high blood pressure, and I have no fear of giving digitalis in high blood pressure.

I was glad to hear what Dr. Swope had to say, and I thank Dr. Egbert very kindly for his remarks.

As to the dropped heart, it is impossible to know just what the size of the heart of an ordinary man is, and if he has a dropped heart, it is more difficult to tell whether your measurements are varying from the normal. Valvular disease I have said nothing about. They affect secondarily the muscles that cause dilation. Myocarditis will very often disappear and allow the heart muscles to contract down to the normal.

DR. G. WERLEY (closing):—So much has been said, and all so well said, that I have very little to add. Dr. Brown had a fine paper, and his remarks were very much to the point. His paper will speak for itself.

A big heart is always a diseased heart, with very few exceptions.

I note Dr. Watkins' remarks about the fluoroscope, and his statement about the inability to measure the heart by physical means; however, I think we are about even on that. With the fluoroscope, if not careful and experienced, you will get a shadow that will throw you off as badly as percussion. Personally, I send more people for x-ray of the aorta than for the heart. You can also often tell by physical examination if you have sclerosis of the aorta. If the aortic arch can be felt, if the subclavian arteries are palpable and the aortic dullness wide, you certainly have aortitis of some kind. I think by using all your senses, you can usually get a pretty good idea whether the heart is big or not. I don't want to belittle the x-ray. We certainly need it, and need it badly sometimes, but what is important to us is what good is the heart; whether it is efficient or not. Just because you find a big heart, you are not through; you still have to determine what the efficiency of the heart is. If our patient can climb two flights of stairs without stopping, and without getting out of wind, he has a fair cardiac reserve and may be operated upon, so far as his heart is concerned.

I always look to see if the liver is enlarged, and listen at the back for rales, and look for dropsy and cyanosis. That will help you out a great deal.

Dr. Brown brought out the point of exercise. I would say, like Alfred Tennyson did, "there is no fool like the old fool," and when an old fool gets to trying to be young again, he is likely to meet disaster. Certainly it is very unwise for any man past forty-five, suddenly to conclude he needs to strengthen himself by going to a gymnasium class, or taking long hunting trips, or something like that, without gradually preparing himself. I do think a great many old people get into trouble with exercise. Walking is the best exercise for an old man, and when you get tired, stop—and maybe I had better stop.

INVESTIGATION OF DIARRHEAL DISEASES IN NEW MEXICO

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At the very outset I wish to emphasize the fact that the title of this paper should not be construed as an indication that the Public Health Service has come to any definite conclusions regarding the etiology of the seasonal diarrheal condition prevalent in New Mexico during the summer and early fall. We are not yet ready to say whether we are dealing with a new disease entity, an unusually large number of diarrheas with various causes, or an atypical manifestation of bacillary dysentery. Our

tain results which indicate the line on which we believe further studies should be carried out, and it is with the view of stimulating the interest and cooperation of the physicians of the Southwest that the Surgeon General has asked me to appear before you.

For several years past the state health officer of New Mexico has been receiving investigations, however, have produced reports of an unusually large number of diarrheas among both resident and tran-

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sient population during the summer and early fall. These reports came from widely separated parts of the state, but, owing to the fact that they seemed to be more prevalent in the immediate vicinity of Santa Fe, it was decided to make that city the headquarters for our epidemiological survey. This survey was started about the middle of July of the present year and was discontinued on September 30th.

During this period, physicians from many different parts of the state of New Mexico have been interviewed and more or less intensive studies have been made in the following places: Army Rest Camp on the Mescalero Indian Reservation, in the southern part of the state, and Santa Fe, in the north central. At the latter point I, personally, saw many cases during their illness and tabulated the histories of seventy-two occurring in Santa Fe itself. In addition to these seventy-two histories, which were believed to be fairly reliable, twenty-three were collected from other parts of the state through the medium of the local physicians, bringing the total in which clinical data could be studied with some degree of accuracy, to ninety-five. In addition to these, we received blanket reports covering outbreaks at Las Cruces, Las Vegas and Hanover, New Mexico. These reports agreed in a general way with the findings at Santa Fe.

The onset was sudden in seventy-three instances; characterized by nausea and sometimes vomiting, in sixty-one of the ninety-five; abdominal pain in practically all (although this was usually of very slight severity) and a copious diarrhea in every instance except three, where constipation was complained of. The stools were watery in character and varied from two or three to twenty-four or twenty-five or even more in the first twenty-four hours. On the second day the symptoms were nearly always much better and very rarely were they severe after the third day. Watery stools were the rule, blood, as noted by the patient himself or his immediate attendant, occurring in but thirteen of the attacks, and mucus somewhat more frequently, having been noted by the patient or his attendants twenty times out of the ninety-five. All ended in recovery.

Slight fever sometimes occurred but it was such a minor symptom that the patient rarely noted it and there were not enough temperatures recorded in the series to be worth tabulating.

The disease was usually lacking in alarming symptoms and so short in duration that no physician was called—hence the diffi-

culty of securing accurate histories or specimens of stools in large numbers. That the numbers were actually large is beyond question, because for every case in which we could get first hand information, we heard of many others who had been sick for a few days with similar symptoms but who had called no physician. Some of these we succeeded in locating and confirming the report, but many were among transients and tourists and no definite data was obtainable.

Although the symptoms were usually mild, none of the cases we studied having ended fatally, we occasionally received reports of deaths from gastro-enteritis in children and old persons in different parts of the state, with a symptomatology which suggested the possibility of an etiology identical with the milder type.

Out of the ninety-five attacks studied, there were seventy-seven first attacks, twelve second attacks, four third attacks, and two with more than three. Forty were males and fifty-five females. The average duration of the attacks was four and three-tenths days, with a median of three days and a modal distribution of four days. The average age of those attacked was twenty-seven and six-tenths years, the median thirty years and the modal distribution also thirty years. Out of the ninety-five attacks, the patients (or the mothers of the patients where the children were too young to express an opinion) attributed the attack to dietetic errors in only twenty instances, and, of these twenty, ten were children varying in age from one and one-fourth years to eleven years.

Besides going fully into the question of dietetic errors, inquiries were made in every case to develop any causal relationship between the attack of diarrhea and the following conditions:

1. Association with upper respiratory affections, including hay fever;
2. Contact with others affected;
3. Unusual sources of food;
4. The possibility of infection through milk or water;
5. Bites of insects;
6. Infected wounds;
7. Undue prevalence of house flies about the premises.

The result of this inquiry indicated that any association with upper respiratory affections and hay fever was accidental; that personal contact with others affected frequently occurred but that it was not an essential factor; that bites of insects and infected wounds were probably not involved, and that unusual sources of food or infect-

ed milk were not under suspicion. The one constant factor noted was undue prevalence of house flies, but whether this was a cause or coincidence, we are not yet able to say with any degree of assurance. Water infection did not seem probable except in one locality, the Zuni Indian Reservation, where an unusually severe form of diarrhea prevailed. Here only those persons, chiefly Indians, who drank the badly polluted river water came down with the disease. The white population, using deep well water, escaped.

The cases at the Zuni Reservation were in all probability true bacillary dysentery. They all gave a history of small, frequent, bloody and mucous stools, with fever and prostration, and frequently terminated fatally. This outbreak was plainly more severe and presented a markedly different clinical picture from the type prevailing in Santa Fe, the Army Rest Camp, Gallup, Las Vegas and other parts of the state.

Bacteriological studies of the stools were carried out by Associate Bacteriologist E. M. A. Enlows, who was sent from the Hygienic Laboratory for that purpose. She made cultures from seventy-four stools taken from fifty-six persons in our series of ninety-five. Among these fifty-six, she found nine different persons from whose stools she succeeded in isolating the Flexner type of dysentery bacillus one or more times. Besides these nine, she found the Shiga type in the stools from the only case we were able to study intensively on the Zuni Indian Reservation—an Indian child who was probably only one of many in that particular locality suffering from an attack of water-borne bacillary dysentery. The epidemiology of the outbreak at this place did not appear to have any unusual features and we refer to it at all only to emphasize the differences between it and the diarrheas we studied in other parts of the state.

One of the persons from whose stools the bacillus was isolated was a woman suffering from general ill health in which acute attacks of diarrhea was only an occasional factor. Another was a woman suffering from chronic infection of the antrum and having repeated attacks of watery diarrhea of two to four days duration with complete recovery in the intervals. Neither one of these two cases gave any history of blood in the stools. There were two others in which the Flexner type was isolated, who gave histories of short acute attacks of watery diarrhea with no blood or mucus.

Besides this intensive bacteriological

study on fifty-six cases of diarrhea, there was a control run by Doctor Enlows on one hundred and fifteen healthy children, varying in age from five to sixteen years. These were all negative.

The symptomatology of the nine positive cases of Flexner type was, on the whole, more characteristic of classical dysentery than the average of the series. Although the duration of five of them was only four days, thus conforming to the type studied, five of the nine also gave a history of blood in their stools, and a decided rise of temperature was noted in six.

Such, in brief, is the summary of our findings. Although the series is too small to justify definite conclusions, it is, we think, large enough to indicate the kind of questions we should ask and to weigh some of the pros and cons in favor of this, or that, answer. For instance:

1. Is the diarrhea we have described peculiar to New Mexico and adjacent states? We hope that the discussion will help us to answer this question. There must be many of you who have formerly practised in other regions of the United States, and, if so, we ask you to tell us whether you have seen widespread outbreaks of three to five day diarrheas, such as we have described.

2. Is it a new disease entity? Probably not—on general principles this is not likely. It has too many features in common with diarrheas of known causes. However, before this question can be answered definitely, many more stools must be subjected to intensive laboratory study and the clinical features we have described must be verified and checked up by other observers.

3. Is this disease, whatever it may be, water-borne? With the exception of the outbreak on the Zuni Indian Reservation, all the evidence we have is against such a theory. The water supplies, in so far as we studied them at other places, were not contaminated and the character of the outbreaks was not suggestive of water-borne infection. But this point also needs further study before giving a final answer.

4. Is it a form of food poisoning? We think not. The epidemiological data we have is against this view. However, there is a bare possibility that some widespread, universally-used article of diet may be infected in some hitherto undetermined way and the question of spoiled fruits, vegetables and milk, needs more study before final rejection.

5. Is it an aberrant form of typhoid or

paratyphoid? The epidemiological data does not favor this view and what laboratory evidence we have, is against it.

6. Is it a disease entity at all, or is it simply a symptom complex with a variety of causes? In other words it is sometimes bacillary dysentery, sometimes an acute indigestion caused by dietetic errors, sometimes an overwhelming dose of staphylococci or streptococci in the intestinal flora, or sometimes a combination of one or more of these causes? This is a long question and we think worthy of much more study before giving a final answer. In favor of such a view is the universal agreement that summertime, flies and camp life combine to produce intestinal disturbances of all known sorts and conditions. In those regions of New Mexico where we studied the outbreaks, we, of course, had the summertime, we ascertained that flies were abundant, and we also noted that we had, in effect, what amounted to camp life. In other words there were always many privies in the community unconnected with sewers and there were many new persons coming or going. In one mining camp there was a rapid labor turn over. In Santa Fe there were tourists, and at the Army Rest Camp, officers and their friends and families came from many different localities. In all the places where the condition was studied by us, we found abundant opportunity for a mutual exchange of intestinal flora from widely separated geographical regions, and before we give a final "No" to this question, we must ask and determine the answer to another, to-wit: Can one man's normal intestinal flora, non-pathogenic for him, be pathogenic for another, or, to put it from a slightly different angle, do we acquire an immunity to the peculiar strains of colon bacilli, streptococci and staphylococci of our own immediate neighbors and suffer an intolerance for those of strangers? So we answer this question with another and go on to our seventh query.

7. Is the disease we have been studying nothing but bacillary dysentery of the Flexner type? Against this view are certain features in the symptomatology as described by Wilburt C. Davison in his comprehensive monograph on bacillary dysentery, published by William Wilkins & Company, November, 1922, and which I believe still represents the consensus of opinion of most internists and pediatricians. These features are as follows:

(1) General malaise, fever and headache, frequently present in the latter part of the incubation period of bacillary dysentery,

were absent in practically all of our cases;

(2) Blood in the stools in sufficient quantity to be noted by the patient or his nurse, has always been considered as a *sine qua non* of the dysentery syndrome. In our series it was absent in most instances except in those in which the diagnosis was confirmed by the laboratory;

(3) The choleraform type, that is with vomiting and profuse, frequent and watery stools, is usually virulent, whereas in our cases these made as rapid and uneventful recovery as the others;

(4) Vomiting is relatively unusual, whereas in our attacks it occurred twenty-four out of ninety-five times;

(5) The pain at onset is usually severe—whereas in our series it was usually very slight.

Besides these clinical points of difference which seem to weigh against the theory of bacillary dysentery, is the outstanding fact that we succeeded in recovering the organism in only nine cases, where, theoretically at least, we should have recovered it in all we examined.

These, then, are the chief arguments which occur to us against the theory of bacillary dysentery. But, offsetting in a measure at least these contentions, are two other reasons of perhaps equal weight. The first is that the symptomatology of bacillary dysentery, especially of that caused by the Flexner type, is frequently atypical. For instance, a child in a family may have a typical attack of dysentery, being extremely sick, with small mucous and bloody stools, and running a course of ten days or longer, while other members of the family suffer at the same time with inconsequential watery diarrheas of only one or two days duration. Examples of this kind when the organism have been recovered from the stools of all the sufferers, mild and severe alike, are numerous enough in the literature to make us not decide off-hand against the Flexner type of dysentery simply because the symptomatology does not subscribe to the classical picture.

The second reason which makes us give pause before accepting the arguments against this theory of causation is the undisputed fact that the organism of bacillary dysentery is extremely difficult to recover from the stools even in cases where it is known to be present. There are many reasons for this, all well attested, but which the limit of my time does not allow me to detail, and it may be that therein lies the whole explanation of why our search for the organism was only twenty per cent instead of 100 per cent successful.

SYMPOSIUM ON ACUTE APPENDICITIS

(Papers and discussions, based on the Clinical Records of three years, covering two hundred patients operated at St. Joseph's Hospital, Phoenix, Ariz., during 1924, 1925 and 1926. Presented at the January Staff Conference, January 10, 1927).

STATISTICAL REPORT ON 200 CASES OF ACUTE APPENDICITIS OPERATED IN ST. JOSEPH'S HOSPITAL, PHOENIX, DURING THE YEARS 1924, 1925 AND 1926.

W. WARNER WATKINS, M. D.,

Secretary of Staff

During the three years 1924-26, appendices were removed from approximately 600 patients in this hospital by 24 different operators. Of this number 200 were classed as acute appendicitis, and the study of this meeting is on this group, leaving the 400 cases of chronic appendicitis, including incidental appendectomies, for some future meeting.

Of the 200 cases diagnosed as acute appendicitis by the operating surgeon, there were fifty-two whose histologic picture was that of subacute or chronic changes, thirteen being classed as subacute and thirty-nine as chronic by the pathological examination. This does not necessarily mean that either the surgeon or pathologist was wrong, but this discrepancy of twenty-five per cent furnishes a serious problem from the standpoint of reliability of records. We believe it should be studied in some practical and impartial manner and steps taken to have the surgeons and the pathologist talk the same language.

Dr. Mills will discuss the pathological changes in the various stages of appendicitis. There are several cases in the record in which it is evident that the surgeon was basing his diagnosis on the acuteness and severity of the symptoms rather than on the changes in the appendix itself. When a surgeon makes a diagnosis of acute appendicitis, opens the abdomen and finds any visible abnormality in color, flexibility or feel of the appendix, he will almost invariably confirm his pre-operative diagnosis. From the standpoint of tissue change, if a patient has had symptoms more than four or five days, and his appendix has not become gangrenous or perforated, the inflammation will be subacute, because it is in the subsiding stage. On the other hand, cases diagnosed early, with every symptom of acute appendicitis, high blood count, nausea, vomiting, fever, pain and tenderness, and operated within forty-eight hours have been classed as subacute or chronic by the pathological examination. There is room for coordination of study. In ten of these

fifty-two cases, which the pathologist classed as subacute or chronic, other possible causes for the symptoms are shown in the records. In these fifty-two cases the blood count was 12,000 or under in twenty-one cases, and over 12,000 in thirty-one.

In the 148 remaining cases, the blood counts were as follows:

Under 12,000	17
From 12,000 to 20,000.....	74
20,000 or over	50
No counts before oper.	7

The number of cases with white counts over 20,000 is rather surprising. The highest counts were in Cases 4731 (38,500, 90% polys), abscess which was drained; Case 5941 (37,000, 88% polys), abscess which was drained; Case 8385 (35,800, 88% polys), acute gangrenous appendix. The lowest count in the series was also a gangrenous appendix which had perforated (Case 6826), whose count was 4,800 with 94% polys.

The only statistical comment referring to etiology which we will make is to call attention to the preponderance of males over females, there being 117 males and 83 females. In chronic appendicitis, there is a striking reversal of these figures, there being 280 females to 120 males in that group of 400.

There were eighteen cases of acute appendicitis in children of 12 years or under, and here again the males predominated, there being eleven boys and seven girls in the list.

In the 200 cases, there were 55, or 22 per cent, in whom the appendix had ruptured or was gangrenous; in fifteen of these there was free pus or abscess formation.

There were fifteen deaths, or a post-operative mortality of 7.5 per cent. Brief summaries of some of these fatal cases follows:

Case 4692. M. 23. Patient had been sick a week, though had not seen a doctor, until day of operation. Had extreme tenderness and rigidity over entire abdomen. Appendix found ruptured with free pus; drain put in; appendix not searched for. Patient had albumen and hyaline and granular casts in urine; died on the fourth day, from peritonitis.

Case 5094. High School boy of 18. Taken sick two weeks ago; trouble subsided and went back to school. Six days ago temperature started up, with pain in lower abdomen; next day pain had increased, was nauseated; temp. 103, P. 90. Operation showed appendix abscess. Drained without removal of appendix. Patient apparently had septicemia and died after three days in hospital.

Case 5463. F. age 23, tuberculous but doing fairly well. Developed acute appendicitis and was operated promptly, but appendix was found gangrenous ruptured, with large amount of free pus in peritoneal cavity. Operated at 1:15 a. m., and died ten hours later.

Case 5629. M. 40. Has had tuberculosis for several years; has been sick a month before entering hospital; has palpable mass in right side. Abscess was drained without hunting for appendix. Fecal fistula formed and before death most of the bowel movements were coming through this opening. Lung and throat condition grew worse and patient died 30 days after entering hospital.

Case 6971. F. 44. Two weeks ago had severe abdominal pain in right pelvis and bladder; diagnosed peritonitis; this apparently localized in the right pelvis, and acute symptoms gradually subsided. At operation right tube ovary and appendix found bound together in mass which had multiple small abscesses. Following removal of this entire mass, peritonitis followed. Infection was streptococci and patient died after several days.

Case 7370. M. 31. Taken ill July 8th, with pain, nausea and vomiting; castor oil and salts administered by physician on the 9th; on entering hospital on the 10th, there was extreme tenderness, rigidity and distention. Appendix was found gangrenous, perforated at junction with cecum; stump of appendix would not hold ligature, and appendix site was inverted. Died on second day after operation, of peritonitis.

Case 8086. Man. Had been having influenza; two days before was taken with pain in the abdomen, followed by nausea and pain referred to the gall-bladder region. Temp. was 104 and pulse 140 on entering hospital, with marked tenderness over entire abdomen. Acutely inflamed appendix, with abscess formed in the middle portion of appendix. There was a secondary drainage operation for peritonitis.

Case 8264. M. 39. Taken ill on Jan. 10th, with vomiting and pain; has had recurrent attacks of abdominal pain. Tender over the gall-bladder and around the side toward the kidney. Densely adherent retrocecal appendix, occluded at proximal end, bulbous at distal end. Developed a post-operative pneumonia and died.

Case 9474. M. 28. Three days before admission, developed severe pain over abdomen; grew constantly worse and his physician advised operation. Patient is tuberculous. Appendix found gangrenous, with involvement of bowel at base of appendix. Died three weeks after operation.

There was some discussion in the Advisory Committee about these cases, as to whether they were all to be classed as surgical deaths. After reviewing them carefully, it would seem that all of these fifteen cases are to be classed as post-operative mortalities. In some of them, tuberculous complications undoubtedly contributed to the fatal outcome, but none of them can be otherwise classed, with possibly one exception, the following:

Case 6500. M. 35. Patient with extensive tuberculosis of both lungs. For two weeks prior to admission has been having an attack, and formation of appendiceal abscess was diagnosed, but operation was refused. Appendix was found retrocecal and acutely inflamed, but no abscess. Fecal fistula formed and was repaired after a month. Patient

had continued to have increased cough and dyspnea, and finally died six weeks after first operation.

If this case, in which the patient apparently died from tuberculosis, is taken off, the mortality in all cases of acute appendicitis is 7 per cent.

This is not an excessive mortality, when compared with other statistics. The most recent report which I have been able to find is one by Warnshuis, who gathered the figures from seventeen hospitals in Michigan, Minnesota and Wisconsin; the mortality in some 5,700 cases was 4.35%; in those reports were hospitals with mortalities of nine, twelve, fifteen and one of 24 per cent. These, of course, were offset by reports showing very low mortality figures. Warnshuis's own personal report was of 327 cases with two deaths. When we consider the circumstances under which patients are referred for operation in Phoenix, many coming in by auto from outlying settlements, many in patients whose resistance is undermined by tuberculosis; many in Mexican people who have waited days before seeking medical advice; when we consider the very high percentage of gangrenous and ruptured appendices in this record, we can have little quarrel with a mortality of 7 per cent in 200 cases.

With regard to anesthesia, ether continues to be the anesthetic of choice with the majority of surgeons, with ethylene second and local anesthesia third. The following are the figures on the anesthetics used in these 200 operations:

Ether	120
Ethylene	30
Local	25
Nitrous Oxide	7
Gas-Oxygen-Ether	7
Local-Nitrous Oxide	5
Local-Ether, or Ethylene.....	6

HISTORY OF APPENDICITIS

J. M. GREER, M. D., Mesa, Ariz.

HISTORY

A knowledge of the morbid conditions affecting the vermiform appendix belongs exclusively to the nineteenth century.

The earliest definite anatomical record of disease in the appendix was reported by Lawrence Heister in 1775 (Med., Chir. and Anat. Cases and Observations).

The report reads as follows:

"In the month of November, 1711, as I was dissecting the body of a malefactor in the public theatre at Altodorff, I found the small guts very red and inflamed in several places, insomuch that the smallest vessels were as beautifully filled with blood as if they had been injected with red wax in the most skillful manner, after Ruysch's method. But when I was about to demonstrate the situa-

tion of the great guts I found the vermiform process of the caecum preternaturally black and adhering closer to the peritoneum than usual. As I was about to separate it by gentle pulling it asunder, the membrane of the process broke, notwithstanding the body was quite fresh, and discharged two or three teaspoonfuls of matter. This instance may stand as a proof of the possibility of inflammation arising and abscesses forming in the appendix as well as in other parts of the body, which I have not observed to be much noticed by other writers, and when in practice we meet with a burning and pain where this part is situated we ought to give attention to it. It is probable that this person might have had some pain in this part, but of this I could get no information."

The first reported case of appendicitis observed during life, is the classical one of Mestivier, in 1759 (*Jour. de med. et chir. et phar.*, 1759). A man of forty-five sought relief for a tumor in the right side of the umbilical region. Fluctuation could be detected and about a pint of pus was evacuated by incision. The wound healed readily, but the patient died suddenly shortly after the operation, and at the autopsy the cecum was found covered with patches of gangrene, but otherwise presenting nothing abnormal. The vermiform appendix contained a large pin, very rusty, and so corroded in places that the least touch would have broken it. "It is easy to understand," continues the report, "that, although the patient had never spoken of swallowing a pin, the one in question had been concealed for a long time in the vermiform appendix of the caecum, and that it was undoubtedly this which had irritated the different coats of which the organ is composed and given rise to all the patient's symptoms, finally causing the death which ensued."

In the year 1766, a medical student, Joubert Lamotte, published a report of a case in which the patient died with supposed intestinal obstruction, and at the autopsy the appendix and cecum were found filled with what were supposed to be cherry stones, and were evidently the first fecal concretions on record.

With the advent of the nineteenth century, the appendix began to be more frequently mentioned. In 1808 Jadelot reported the case of a boy who died of an "adynamic fever," where lumbricoid worms were found in the appendix at the autopsy.

In 1812, a London physician, Parkinson, published the case of a boy of five, who died of an attack of what was evidently acute appendicitis, and the autopsy showed a perforation of the appendix. This is the first case in which perforation of the appendix is recognized as the cause of death.

In the year 1824, there appeared an article by a Frenchman, Louyer-Villermay,

which at once established a definite place for the lesions of the appendix in the category of recognized diseases (*Arch. gen. de med.*, 1824). It contains the report of two cases in which both patients died after a brief illness characterized by violent pain in the right side of the abdomen, and vomiting. In both autopsies the appendix was found gangrenous.

During the first thirty years of the nineteenth century all interest in the vermiform appendix centered in France and England, but in the year 1830 a student of Puchelt, Goldbeck, published an inaugural dissertation on tumors in the right iliac fossa, which stimulated inquiry in Germany just as it began to decline in France, and for the next twenty-five years all important communications upon the subject proceeded, with few exceptions, from Germany.

During the period of time when Germany occupied such prominence in the literature of the appendix, four important contributions to it appeared in England—by Copland, by Hodgkin, by Bright and Addison, and also by Burne.

To Copland belongs the credit of first discriminating between inflammation of the appendix, inflammation of the cecum, and inflammation of the pericecal tissue.

The papers by Hodgkin and by Bright and Addison, contain excellent descriptions of the condition in question as observed upon the autopsy table, descriptions so clear and well presented that they could not be surpassed today.

Burne's papers somewhat hindered progress by the introduction of the term "typhlo-enteritis." The unfortunate term "perityphlitis" invented by Goldbeck and his master Puchelt, had already diverted attention from the organ really at fault.

In the year 1837, the first American contribution to the history of the appendix appeared. Wolcott Richards, of Cincinnati (*West. Journal of Med. and Phys. Sci.*, 1837) published a case in which the patient, a man of thirty-five, had a distinct chill followed by fever, but without pain or vomiting. On the fifteenth day he died in sudden collapse, and the autopsy showed a general peritonitis with recent adhesions, while the pelvis was filled with fecal matter issuing from a large ragged perforation in the appendix. Dr. Richards comments upon the fact that not only the vomiting but abdominal pain and tenderness were absent during the entire illness, and only after the final change for the worse was there extreme tenderness in the hypochondrium, with slight distention. In the next year a sim-

ilar case was reported in Philadelphia by Edward Hallowell (*Am. Jour. Med. Sci.*, 1838) and these two cases, with four others, were all that appeared upon the subject in the United States for nearly twenty years.

The year 1838 was distinguished by the first operation for disease of the appendix as such. The aggressive surgery of the appendix as practised today, is a development of the last forty-five years, but the incision and evacuation of old encysted collections of pus in the right iliac fossa was practised as far back as the beginning of the Christian era. The treatment by incision and drainage at the point of fluctuation was practised and taught by Dupuytren, but the idea of incising the tumor before fluctuation appeared did not occur to him or his followers.

The first decisive step in the direction of modern methods was taken by a London physician, Hancock (*Lancet*, 1848) who, after making a diagnosis of inflammation of the appendix, incised the mass in the right iliac fossa without waiting for fluctuation to appear.

By the middle of the nineteenth century the true nature of disease of the appendix began to be recognized by the medical profession in general, as shown by a glance at the literature of the period. The obstacles which had blocked the progress of knowledge gradually disappeared, and after the year 1860 disease of the appendix became more and more a question of surgery.

In 1867, Willard Parker, of New York, published a report of four cases in which he treated abscess in the right iliac fossa, consequent upon inflammation of the appendix, by incision and evacuation. The first three cases, which occurred at intervals during the twenty years preceding Parker's report, were operated upon after fluctuation had appeared, but during this period Parker became convinced that it was not necessary, nor even desirable, to wait for fluctuation before making an incision, and the last of these four cases offered him an opportunity to put his theory to the test. The conclusions which Parker drew from this successful experiment were that nature attempted in such cases to protect life by building a wall of adhesions around the abscess but that ulceration of this protective wall might give exit to the contents. The question for the surgeon to consider, therefore, was, what could be done to assist nature in her efforts and at what period would his assistance be most useful. In Parker's opinion, the best time for the

incision is between the fifth and the twelfth days, that is to say, after the adhesions are fully formed and before the maximum amount of pus is reached. The case in which Parker put this theory to the test was operated upon on the sixth day, when there was an area of circumscribed tenderness in the right iliac fossa, but no definite swelling, still less, fluctuation. An incision was made through the skin, beginning about an inch above the anterior superior spine and extending for about six inches toward the symphysis. As soon as the transversalis muscle was reached, the tumor could be felt, and it was freely opened, about four ounces of pus being evacuated. A tent was then inserted and the wound left to heal by granulation.

Parker's paper at once provoked discussion in many quarters, and the method he employed came into general use as the "Willard Parker operation." The medical profession had, by this time, acquired the anatomical and pathological knowledge necessary for many similar advances, and the only thing needed to inaugurate a new era in the treatment of the disease was a guarantee of safety in operation. During the year following the appearance of Parker's paper, this fundamental necessity was supplied in the principle of antisepsis, introduced into surgery by Sir Joseph Lister, and the surgical history of the appendix began.

It is also of interest to note here the reduction in mortality after the introduction of Parker's operation. In 1867, the death rate from inflammation of the appendix, under the non-operative treatment, was forty-seven per cent, while in 1882, when Parker's operation had been in use for fifteen years, it was reduced to fifteen per cent.

Up to this time, that is to say, the early eighties, incision before the detection of pus was the most daring procedure which surgeons had ventured to propose, but the time had now come when a much more radical measure was to be adopted and the actual removal of the appendix became the point upon which the eyes of the surgical world focused.

In 1884, Professor Mikulicz, of Krakow, performed an operation in which the appendix was ligated and removed in toto; this was published in 1886 and was the first instance of celiotomy followed by resection of the appendix, both as to date of performance and date of publication.

In the year 1886 an article appeared in America, by Reginald Fitz, of Boston (*Am. Jour. Med. Sci.*, 1886) in which the word "appendicitis" appears for the first time.

The first operation on the appendix performed in the United States, was done by R. J. Hall, of New York, on May 8, 1886. The patient was a boy of seventeen who had had an irreducible hernia for several years. During the course of inflammation the hernia became strangulated; he was operated on for strangulated hernia, and the appendix was found.

The first successful laparotomy followed by removal of the appendix, undertaken with that possibility in view, was done by Thomas G. Morton, of Philadelphia, on April 27, 1887.

ETIOLOGY OF APPENDICITIS

The causes of appendicitis may be put into three divisions: (1) predisposing; (2) exciting; (3) final, or essential.

I. PREDISPOSING CAUSES may be local and general.

The appendix is a blind sac of relative great length and small caliber, and is very abundant in lymphoid tissue. It also borders on a cavity that is rich in bacteria.

Age. Appendicitis is a disease of early life. It is common between the ages of ten and thirty. A series of cases at the Johns Hopkins Hospital showed seventy-eight per cent under the age of thirty. The well recognized susceptibility of lymph tissue to infections during early life, is the probable explanation of this.

Sex. There is a greater liability in the male sex. The reason for this is probably because of the greater liability to exposure to injury and errors in diet.

Nationality: The negro race is relatively exempt from appendicitis. In the Johns Hopkins Hospital the relative admissions of whites to colored are 4 to 1, the cases of appendicitis are 12 to 1.

Hereditary Influence. Appendicitis frequently occurs in members of the same family.

II. EXCITING CAUSES:

Disorders of Digestion, such as constipation. In a series of cases at the Johns Hopkins Hospital 43 per cent had a history of constipation immediately preceding the attack. Sometimes the onset of the attack may be marked by diarrhea. An attack many times follows the ingestion of unsuitable food or a particularly hearty supper.

Menstruation. There is a relationship of the menstrual period and appendicitis. This is probably due to the congestion of the splanchnic area.

Trauma. This may be a direct factor in the cause of appendicitis in some cases.

Foreign Bodies and Concretions. A few years ago the origin of appendicitis was

frequently attributed to foreign bodies such as the seeds of various fruits. Foreign bodies are rare, but at times are found, in the appendix. Many of the seeds described in the older literature were no doubt concretions. Intestinal parasites are sometimes found in the appendix, and may be a factor at times in the cause of appendicitis.

III. FINAL CAUSES:

The immediate cause of appendicitis is always microbic infection. The theory of stagnation and exalted bacterial virulence is no doubt true here.

The normal appendix contains in its canal the infective agent, which is innocuous to the healthy bowel. It is not necessary to introduce virulent bacteria into the appendix to produce inflammation, however. The aseptic ligature of the bowel forms a closed tube, and the consequent stagnation of the contents increases the virulence of the contained organisms. The tissue resistance is diminished and all the necessary conditions for an inflammatory outbreak are at hand.

Appendicitis may be a local expression of a general infection. It has been said that "Grip is the true cause of appendicitis." There may be an association of rheumatism with appendicitis, as well as tonsillitis. A relationship with various infectious diseases has been described.

SUMMARY:

1. A previous inflammation renders the appendix susceptible to further attacks.

2. The most important cause of appendicitis is digestive disturbance.

3. Acute or chronic enterocolitis may occasionally be an exciting cause.

4. Enteroliths and foreign bodies usually play a passive role. Pointed bodies and enterozoa may be direct exciting causes.

5. The clinical evidence is in favor of an intimate relation between appendicitis and rheumatic fever.

6. Animal experimentation and clinical demonstration make it plain that general infection is frequently the exciting cause of acute appendicitis.

7. It is not yet determined whether the general infection merely acts as an exciting factor by preparing a suitable soil for the activities of the intestinal bacteria, or whether the specific microorganism is the direct cause of inflammation of the appendix.

DISCUSSION

DR. S. D. LITTLE, Phoenix:—Doctor Greer has been so complete in his resume of the subject that I will just follow his outline and add a few remarks on the etiology of appendicitis.

In the Relation of the Appendix to the Cecum anatomically and physiologically there may be such a disposition of the mucous membrane at the point

of communication as to serve the purpose of a valve. There may be also a certain physiological spasticity of the circular fibers of the cecum at the point of communication with the appendix such as to form a temporary closure, locking up contents from the bowel for a time. These may be of such a degree as to produce or favor disease. This irregularity of the sphincter action has been noted particularly in x-ray examinations of the gastro intestinal tract. According to Doctor G. E. Pfahler it has a diagnostic value.

On account of the rudimentary structure of the appendix and on account of the want of any definite function, the appendix, about middle life or soon thereafter, undergoes an involutional change, so that finally it presents the appearance of a hard fibrous cord with scarcely any lumen. For this reason we find very little appendicitis after middle life. It has been suggested that the change may occur also as the result of an inflammatory reaction. The process usually begins at the tip and extends toward the base. Occasionally it is found localized some distance back of the tip while the tip is still apparently normal. This may be the result of a localized slow inflammatory process which may eventually lead to an acute exacerbation, producing the symptoms and signs of acute appendicitis.

Relation to Other Organs. The appendix usually has a mesentery, and at times this may be long enough to allow of a wide range of movement, especially of the distal end. When there is no mesentery, or when it is short, the appendix may be in close relation to the head of the cecum lying anteriorly, posteriorly, or to the outer or inner side. Any of these positions may be the determining cause of disease, but when the mesentery is long and the tip freely movable it may engage in an inflammatory process which is primarily either in the pelvis on either side, in the gall-bladder region, in the region of the stomach or pylorus, or in the opposite side of the abdomen. In some of these positions the appendix may become kinked in such a way as to favor disease.

Age and Sex. Young adults under thirty years, especially males, constitute the majority of cases. There are considerably more males operated on in acute appendicitis, while females are more numerous in the chronic cases. This disparity is supposed to be due to the fact that females are subject to more abdominal pains incident to menstruation and pregnancy and are more likely to defer operation.

Appendicitis is rare in children under two years, is claimed by most authorities. In one thousand cases reviewed by A. J. McCosh only four were under two years of age. However, W. B. Coley, of Columbia University, says: "Appendicitis occurs at all ages and is not uncommon at the first two years of life. It is more common in the first six months of the first year and the last six months of the second year. In eighty cases of appendicitis in infants, twenty cases were under three months of age, among which were two possible instances of prenatal appendicitis."

Constitutional Conditions are a distinct factor in the etiology of appendicitis. Out of 804 cases operated on by William B. Coley, constitutional debility was found in 57.7 per cent and a strong constitution in only 8.4 per cent. Familiar predisposition existed in 21.6 per cent of cases of destructive appendicitis and in 32.2 per cent of the catarrhal form. Poor nutrition was present in 49 per cent and good in 9.2 per cent. Nervous abnormalities existed in 76.8 per cent of the destructive, and 84.7 per cent of the catarrhal cases.

Doctor Greer stated that the immediate cause of appendicitis is microbic infection. Any micro-organism, when favorable conditions are present in the appendix, may have pathogenic properties. Doctor John A. Lichty says the organisms usually found are the streptococcus pyogenes, the streptococcus hemolyticus, the bacillus coli communis, the influenza bacillus, and others.

Social Condition. The question as to the plan of entrance of the microorganism and the route it takes to the appendix, is not definitely answered. Some, among whom Aschoff is an exponent, hold that the infection comes directly from the intestinal canal; others, among whom Kretz is a leading exponent, insist that the microorganism comes from some certain focus, as the tonsils, and gains entrance to the appendix through the blood stream. Rosenow, in line with this latter idea, reports an extensive work in which he undertook to demonstrate that the microorganisms infecting the appendix have an elective affinity, and seek the tissue of this organ by special predilection. In this way he sees the close relation between diseased tonsils and a diseased appendix. Contrary to Rosenow's idea, Chastenet produced appendicitis in rabbits by feeding pathogenic bacteria.

Recently, while watching Doctor John Deaver operate, I heard him say that he has come to believe more and more that appendicitis, cholecystitis, and gastric ulcer are often the sequelae of focal infection. The fact that appendicitis may be caused by bacteria taken into the system through the alimentary canal or blood stream may account for the so-called epidemics of appendicitis reported in families, schools, and colleges.

Diet. The diet which most people eat seems to be a definite contributing cause. Most foods are prepared in such a way that mastication is scarcely necessary. Foods are taken hurriedly. The result is that altogether too much work is thrown upon the stomach and bowels the cecum is compelled to receive the meal within six hours of its ingestion, no matter how poorly the digestive process has gone on. This may eventually lead to changes in the structures of the cecum, which are in turn taken on by the appendix, and disease occurs.

Trauma. As to trauma, a study of 1400 cases by J. B. Deaver showed that trauma was never the direct exciting cause of acute appendicitis in a perfectly normal appendix. However, trauma may promote trouble in an appendix already diseased.

PATHOLOGY OF ACUTE APPENDICITIS

H. P. MILLS, M. D., Phoenix, Ariz.

Appendicitis is an inflammation of the mucosa, muscular layers and interstitial structures of the appendix, frequently with extension to the peritoneal coat. Faulty drainage, due to narrow orifice, sharp kinking, fecaliths or, occasionally, foreign material, plays a part in its causation; unusual virulent bacteria in its lumen or a blood and lymph borne infection, represent the route of entrance of the infecting organisms. A large per cent of acute cases (some writers say practically all) show obstruction of lumen. This may be considered as one cause or as a result of the inflammatory change. Case in which the

proximal third showed no inflammatory change, and distal half was gangrenous, had obstruction at this point. The infection travels from the mucosa outward, the polynuclear cell infiltration spreading outward through the submucosa and muscular coats to the peritoneum in a very short period of time, within twenty-four hours—and often within five or six hours—all the layers being involved. Associated with this infiltration is found edema, hemorrhagic extravasation and necrosis, the latter, in the earlier stages, being in small focal areas and involving especially the mucosa. By the second day, or earlier, these microscopic necrotic lesions have coalesced and form macroscopic areas of necrosis leading the way to gross perforation of the appendix. The appendix is really perforated bacteriologically much earlier and involvement of the peritoneal coat occurs, so that the protection of the peritoneal cavity depends upon the development of, and maintainance of, integrity of the fibrinous protective exudate. Gross perforation, if it is to occur, usually takes place before the end of the second day.

By the third day, in the majority of cases, the changes have advanced to the maximum and attempt at repair begins. If gangrene or perforation has not occurred, microscopic evidence of repair is found in the presence of fibroblasts in the various layers of the appendix, especially evident in the subserous and submucous layers. In the gangrenous and perforative cases, the repair process proceeds more slowly, being first seen in vascularization and organization of the protective exudate, followed by liquefaction and absorption of dead cells and replacement by new fibrous tissue. Small ulcers of the mucosa are usually bridged over by epithelium, so that, in many instances, the patency of the lumen is preserved. The repair goes on quite rapidly so that, after a week or more, the microscopic picture is characteristic of a sub-acute or chronic process.

The blood findings in acute appendicitis are practically confined to changes in the number and relation of the leukocytes. The leukocyte count in a typical case shows a definite increase, with an elevation of the percentage of polynuclears. The total count varies from 12,000 to 20,000, occasionally higher. Such a count with less than 75 per cent polynuclears points to an infection of slight virulence or local resistance sufficient to limit its spread. A leukocytosis with polynuclear percentage of 85 to 90, or more, indicates an active advancing infection, probably peritoneal involvement. A

high polynuclear count, in the absence of a leukocytosis points to a grave condition, the resistance to the infection being broken down.

In nineteen cases the post-operative diagnosis was chronic or subacute appendicitis, and pathological report was the same, with blood count of 12,000 or above. In all but four of these cases, the clinical findings and history, as given on the chart, point to other pathology which would account for the leukocytosis. In these four cases no explanation for the leukocytosis could be found in the patients' charts.

ACUTE APPENDICITIS IN ADULTS: CLINICAL FINDINGS

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SYMPTOMATOLOGY

The classical appendicitis characterized by slight fever, rigid right rectus muscle with greatest point of tenderness at McBurney's point, constipation and nausea, with early vomiting, builds up a set of clinical symptoms that make the diagnosis of appendicitis supposedly a mere trifle. But it so happens that many times the classical findings have missing links; and it is just that which makes interesting probably the most common of surgical diseases of the abdomen.

1. The Physical Signs of Acute Appendicitis. The patient is inclined to the right side, right thigh flexed. Facial expression, depending on the severity, shows suffering; usually pale. No great early changes in the contour of the abdomen; however, if peritonitis has developed, the abdomen is distended. Pulse, at the beginning, is wiry; in the later stages it shows variation, is weak, dicrotic and rather easily compressible. Tenderness may be observed over the abdomen but in most cases, after first few hours, centers at McBurney's point. Rigidity, while not an infallible sign, must be considered of much significance. The two recti are easily comparable. A circumscribed induration in most acute cases manifests itself after twenty-four or thirty-six hours; as the case continues the swelling more and more obliterates the natural curve of the iliac fossae. In those cases where the appendix is directed backward and upward (Case 5734) the tenderness appears to be just above the crest of the ilium, with a tendency upward in the axillary line. With the stethoscope there can be noted, many times, the fine rubbing like rales over the right iliac fossae.

2. The chief symptom, or the attractive symptom, of appendicitis is pain—abdom-

inal pain. This pain is at first colicky in character and usually, the first twelve hours, is more or less diffuse over the entire abdomen. As the condition proceeds, the pain gradually has its point of intensity in the right lower abdominal quadrant. Occasionally the right side is the sole location of pain and very frequently the patient complains of pain in right thigh and genitals (Case 4991). The final location of the pain is at, or near, McBurney's point. The cessation of abdominal pain, with continued symptoms, in appendicitis usually means rupture.

3. The point of extreme tenderness, as stated, is located at McBurney's point, which is described as at, or near, the middle of a line from the umbilicus to the anterior superior spine. According to MacKenzie, it is directly over small filaments of the last two dorsal nerves where they pierce the rectus. While McBurney's point of tenderness is usual finding, yet adhesions (as noted in case 9579, where appendix was attached to lower pole of the kidney; and again in case 9876, with adherence of appendix to a tubo-ovarian cyst) may make McBurney's point valueless. This is also true in Case 8908, where there were anatomical irregularities (a noted failure in rotation of the colon) completely changing the usual landmarks. Again, on account of adhesions to the posterior wall (case 5734 and case 7144).

4. Rigidity. The rectus usually shows this defense in protection (cases 6500 and 6324); while case 7154, acute appendix, states that no rigidity was found, proving that not always is rigidity necessary.

5. Constipation is the rule. I have never seen an uncomplicated appendicitis otherwise and no case report that I have examined has given diarrhea in the history. However, some authorities make the statement that diarrhea, associated with the usual symptoms, is a dependable symptom.

6. Vomiting rarely persists. While reflex, yet the retching and straining in emesis does aggravate or, at least, rather intensifies the abdominal pain.

7. Fever, while rather a constant early symptom, is occasionally absent, as noted in cases 6718 and 6197. Higher temperature, 104 or even higher, occurs. Fever cannot be considered a guide to the severity of the case; many case histories show severity with low temperature. Pulse is 90 to 120.

DIAGNOSIS

Ruptured peptic ulcer, pancreatitis, renal colic and intestinal obstruction, until in-

fected, rarely produce fever or increase white count, though they show sudden nausea, vomiting, and pain.

Movable kidney (in Dietl's crisis) may give appendiceal symptoms, but the history of previous attacks and the excessive output of urine are distinguishing features.

Acute hemorrhagic pancreatitis will give just cause to think of appendicitis and peritonitis. The deep pain, shock, with a show of blood sugar, will assist in differentiating.

In acute tuberculous peritonitis, the onset is more gradual, although the pain, tenderness and fever, are similar to those symptoms in appendicitis. However, the right side resistance is not present and a more general abdominal dullness can be demonstrated.

Pyosalpinx gives history of infection, with presence of mass on vaginal examination. Case 9112 shows adhesion of appendix to right tube. Case 9071 shows an acute appendix with a right and left hydrosalpinx with twist in each pedicle. Case 5755 shows same, with intestinal fibroid, multiple ovarian cysts, and myofibroma.

Ectopic gestation gives history of suppressed menses, shows sudden onset, shock, pallor, no fever, no marked change in blood count.

Volvulus is usually located at the sigmoid. However, twist or adhesion may simulate appendicitis. Failure of bowel action, and later stercoraceous vomiting will differentiate.

Cholecystitis, with retention, in absence of jaundice or the pear-like tumor, is confusing, should the appendix on account of abnormal position be attached at or near the liver as noted in cases 6478 and 5932.

Perinephritic abscess (which was diagnosed by Dr. Murphy on all but his friends, by a punch in the back) may simulate appendicitis. The x-ray or exploration may demonstrate the difference.

Lobar pneumonia, involving the right base, or pleurisy involving diaphragm on right, while not frequent in adults, is confusing when it does occur. The chest findings and rusty sputum will aid.

Lead poisoning gives history, blue line on gums, and lack of right rigidity.

Syphilis is differentiated by the abdominal lightening pain or Devil's grip, history, and blood findings.

In conclusion, I wish to compliment the physicians for, in the most part, rather complete histories, with special mention of author of history 9579-8908. It has been a real pleasure to try to review the 200 or more histories.

DISCUSSION

By DR. ORVILLE HARRY BROWN. Dr. Gudgel has given such an excellent and thorough discussion of the symptoms and diagnosis of acute appendicitis that it is with difficulty I have found anything at all to say without a reiteration of truths. I shall, however, attempt to avoid repetition.

One of the important points in the diagnosis of acute appendicitis is to get the patient and his family to accept the diagnosis in all its seriousness. I have nothing special to say on this subject except, "Do not stretch the truth; at least do not state an untruth in order to convince the patient or his family of the correctness of your diagnosis." Patients sometimes get well when it seems an impossibility.

The diagnosis of an acute case of appendicitis is, ordinarily, not difficult. It is sufficient, as a rule, to make the diagnosis of surgical abdomen. One of the possible errors is to diagnose a kidney or ureteral stone as an acute appendicitis. This would probably necessitate turning the patient over for another incision. It might be possible to mistake gallstones or a perforated peptic ulcer or other abdominal disease, for appendicitis. In such an event it ordinarily means only extending the incision a short distance and, possibly, adjusting the operating table.

If you diagnose every acute condition of the abdomen as acute appendicitis you will be wrong in less than 30 per cent of the cases.

Lichty says, in 100 cases of acute surgical conditions of the abdomen, 70.3 per cent will be appendicitis; 18.1, intestinal obstruction; 7.2, perforations; 2.4, cholecystitis; and 1.1 per cent, twisted pedicles.

As said by Dr. Gudgel, the outstanding symptom of acute appendicitis is pain, which, at first, may be referred to any place from the chest to the lower part of the pelvis. Its localization in the lower right abdomen usually results within thirty-six to forty-eight hours.

As I think back over my cases of acute appendicitis it seems to me that vomiting was relatively rare. Lichty says, however, of eighty-three cases, nausea occurred in seventy-two and vomiting in fifty-six of them. Seven of these eighty-three had diarrhea instead of constipation.

Dr. Gudgel, I believe, did not mention the importance of a rectal examination in the study of an acute case of appendicitis. This should rarely be omitted.

Another point worthy of mention is the pain that is engendered by a release of pressure over McBurney's area. If pressure is made gently and firmly over the appendix and the pressure is suddenly released, definite increase in pain in the area is noticed.

Livingston has called attention to the hyperesthesia found in the right lower quadrant of the abdomen as tested by pinching the skin between the fingers. Definite hypersensitiveness is found in the right lower quadrant. Another way of testing this hypersensitivity is by means of pin pricks.

I would reiterate one point made by Dr. Gudgel, which is, that muscle spasm is the most important diagnostic sign. It is an almost constant finding but it may have to be tested for delicately.

Differential diagnosis must consider anaphylactic reactions in the region of the cecum. Osler was the first to call attention to angioneurotic edema of the abdomen. Duke and others have proven the possibility of anaphylaxis giving symptoms resembling those of appendicitis.

Another condition which I have found several times is an appendix adherent about the end of the cecum, which, when the cecum is markedly distended, is stretched so that it is acutely painful. Therefore an acute appendicitis has to be differentiated from chronic appendicitis.

THE SYMPTOMS AND DIAGNOSIS OF ACUTE APPENDICITIS IN CHILDREN

D. Fournier, M. D. C. M., Phoenix, Ariz.

In childhood the order of appearance of symptoms is usually the same as in the adult. There is, first, generalized abdominal distress, commonly beginning with severe or sudden epigastric pain; second, within a few hours, nausea and vomiting occur; third, rigidity and tenderness appear in the right lower quadrant; fourth, elevation of temperature occurs within the course of several hours; lastly, leukocytosis appears.

Acute appendicitis begins with a pain of a sharp or colicky character in the epigastric region, usually sufficient to bring the child to its mother. Not infrequently the pain begins in the right lower quadrant. There is not the sudden, overwhelming, staggering pain of a perforation, but it is rather on the order of the old time "stomach ache," growing worse in the course of an hour or two. The sharpness of the pain may diminish but, unless spontaneous recovery occurs, it does not disappear.

A series of twenty-five children who came to this hospital for operation and whose histories were analyzed, offers some very interesting and instructive facts as to the character of the pain at the outset.

Generalized abdominal pain of a dull or colicky character was present in twenty-one cases, or 84 per cent; and was absent in three, or 12 per cent; and in one case no history was given.

The character of the pain was colicky in ten, or 40 per cent; dull in two, or 8 per cent; dull and colicky in three, or 12 per cent; and unknown in ten cases or 40 per cent.

Symptoms in order of development: (1) generalized pain, (2) nausea and vomiting, (3) localization in the right lower quadrant. We may conclude that in the great majority of children the first symptom to usher in an attack of appendicitis is generalized abdominal pain, usually colicky in nature. However, generalized pain may be entirely absent, as was the case in 12 per cent of this series.

Localization of pain in the right lower quadrant was present in eighteen cases, or 72 per cent, and absent in six, or 24 per cent.

In the order of appearance of symptoms,

pain in the right lower abdominal quadrant was the first symptom in eleven cases, second symptom in seven, and in six no record was made as to the order of appearance of symptoms.

The nausea which early follows the onset, commonly terminates in vomiting and the vomiting may be repeated once, twice or oftener during the day. While emesis is very frequent in any of the affections of childhood, still, nausea alone may be present. Vomiting is very constant but not persistent during the earlier stages of the disease. In the later stages of the disease, following rupture of the appendix, vomiting may reappear as a symptom of peritonitis.

Of the twenty-five cases studied, vomiting was present in fifteen, or 60 per cent, at the onset, and in nine cases, or 36 per cent, it was absent. Nausea alone occurred in one case.

In the course of several hours following the onset of appendicitis, the temperature begins to rise. The temperature may range from 99 to 103 degrees F.; while a temperature over 103 degrees is rather suggestive of trouble elsewhere.

Pulse and respiration usually correspond to the temperature. When there is a spreading peritonitis the pulse becomes very rapid, weak and often irregular.

Chills at the onset of appendicitis are rare. Constipation is very frequent in these cases and is usually well marked, and it may reach a degree suggestive of a mechanical obstruction. Diarrhea occasionally ushers in an attack. The practice of the laity of administering cathartics often masks the true state of affairs, and is to be condemned.

The examination of the abdomen in a child old enough to express its feelings, is as fruitful of results as in an adult. It should be carried out, however, with much tact. The child's confidence should be gained. Rough handling should be avoided, as the fear it excites at once eliminates any value one might get in palpation as an aid to diagnosis. The child should be in bed or on a pillowed table. He should lie with head, shoulders and knees well raised and supported. The examiner's hands, as well as his heart, should be warm. A warm heart will gain the child's confidence.

Two points are made out on palpation: a localized area sensitive to pressure, and an area of localized involuntary rigidity. In palpating for an inflamed appendix, one of the most constant findings is an involuntary muscular reaction which is known as rigidity. Abdominal distention is usual-

ly an indication of extension to the peritoneum, and is a late development. The child is frequently found lying on its right side or back, with the right thigh flexed on the abdomen.

The symptoms of appendicitis in infants are similar to those in older children, but there are some points of difference, as a rule, in infancy. The disease has a more insidious onset, and it has a tendency to develop rapidly into a general peritonitis, as happened in one of the cases studied in this hospital, in an infant one month old. This was a very interesting case; first, on account of the age of the child, and secondly, in the multiple post-mortem findings. The result of the post-mortem showed the child had a lobar pneumonia, a general peritonitis, an acute hepatitis, a congenital stricture of the urethra, acute nephritis and an early acute appendicitis. This child did not have as much chance as the proverbial snowball.

In making a diagnosis of appendicitis, the main points to be considered are: (1) history of a previous attack; (2) situation of pain; (3) rigidity of lower portion of right rectus muscle.

Of all the sources of difficulties in the diagnosis of appendicitis in children, gastro-intestinal disturbances easily head the list. Differential diagnosis should be based on the history, the symptoms and signs, and a complete examination of the entire patient. In making a differential diagnosis we have to consider those conditions outside the abdominal cavity, namely, infections of the respiratory tract, the exanthema, and typhoid fever. In differentiating it from pneumonia, a few points may be emphasized. Pneumonia gives a previous history of cough and cold; the abdominal pain is severe and constant, while that of appendicitis is paroxysmal, less intense; vomiting is much more prevalent in appendicitis than in pneumonia. Abdominal tenderness is more marked on deep pressure in appendicitis than in pneumonia. The temperature in pneumonia ranges from 103 to 105 degrees, while in appendicitis it ranges from 98.6 to 102 degrees.

In acute intestinal obstruction, the onset is more abrupt and the pain is more severe. Tympanitis develop early and vomiting is very persistent. There is an absolute constipation.

Intussusception is characterized by intermittent pain, colic, vomiting which is severe from the outset, and bloody stools. Acute nasopharyngeal infections may at times be very confusing. Urinary tract infections are common and a fertile source

of error. Pyelitis on the right may be difficult to differentiate from an appendicitis. It is more common in girls. The temperature is rather high and the urinary changes are marked.

CONCLUSIONS

Every acute abdominal condition in children should be looked upon as appendicitis until it is proved otherwise.

The dangers and frequency of appendicitis in children should be explained to parents. The wholesale giving of cathartics to children in every abdominal complaint should be warned against, as it is often a dangerous procedure. Parents should be instructed in this danger.

Discussion by DR. JOHN WIX THOMAS:—This is such a comprehensive paper that there is little to be added to it, and only one or two points which will bear emphasis. It is very advisable to teach people to avoid cathartics in sickness that comes in the home, especially among children. Another point is that rigidity of the rectus muscle is one of the most constant symptoms and is present in the majority of cases. None of the symptoms are present in all cases. It is a mistake to rely on any one symptom, but must look at the picture as a whole. Another point is the leukocytosis. This does not appear early in every case, but is one of the principal points for differentiation.

TREATMENT OF ACUTE APPENDICITIS

E. PAYNE PALMER, M. D. F. A. C. S.

Phoenix, Ariz.

Acute appendicitis is a surgical disease amenable only to operative treatment. The patient should be operated upon as soon as a definite diagnosis is made and the patient can be taken to the hospital and prepared for operation, unless there is some contraindication. Statistics of insurance companies show that there are practically no deaths in appendicitis operated upon before the end of the second day of an acute attack. If, for any reason, operation cannot be performed, the Ochsner treatment (rest and starvation), if properly applied, will save a number of lives.

Appendectomy, during an acute appendicitis, may be a very simple procedure but is frequently one of the most varied and difficult of operations. The McBurney incision is not satisfactory for exploration and, in adults, a considerable percentage of such incisions are followed by inguinal hernia within from one to two years after the operation, because of muscular relaxation at the inguinal ring, probably due to the injury of a nerve.

A straight, low, right rectus incision is greatly to be preferred as it permits of exploration and can be enlarged if needed. I prefer the Battle incision when the case is

early and not expected to be difficult, but, in the very acute cases, a low, right, paramedian incision which is long enough to give a free exposure of the abdominal cavity in order to be sure that no infected areas are overlooked, to permit of sufficient protection of the remainder of the peritoneal space, and to allow free handling of the appendix without danger of damaging other structure. In the average case, a three or four inch incision will suffice and, if necessary, this can be enlarged. Extreme care and gentleness should be used in making out the position and relation of the appendix. When this is done, the field of operation should be isolated by the free use of moist gauze abdominal packs until there is no danger of infectious material being spilled into the abdominal cavity, and only the inflamed appendix and the parts immediately adjacent to it, remain exposed. Frequently, the inflamed appendix is buried in a mass of dense adhesions, and again extreme gentleness must be used in finding a line of cleavage so the appendix can be isolated and delivered. This is frequently extremely difficult and even the most expert operator may have difficulty in distinguishing between a greatly distended appendix and a small intestine. When the appendix is delivered, a gauze strip should be pushed down into the bed from which it came.

There are essentially two methods of doing an appendectomy. The inversion, or burying, of the stump and the ligation and drop method, leaving the stump free. I prefer and practice the former, although the latter has many claims of superiority made for it. If a perforation, or gangrenous area which is in danger of perforating, is found, the base of the appendix should be crushed with a clamp, a catgut ligature tied into the groove and the appendix cut away at once, to prevent spilling of infectious material. Rarely, the cecum at the base of the appendix is gangrenous and must be closed with double layers of catgut sutures. In these cases it is good practice to stitch the omentum over the wound.

The field of operation should be dried and the gauze packs removed and the omentum brought down into the field of operation. If the case demands drainage, a large split rubber tube is passed down to the cecum and another into the pelvis, and the abdominal wound closed. The tubes are usually removed in from three to five days.

The large appendix abscess should be dealt with as an abscess elsewhere would be—open into the most accessible part and

establish free drainage, from the lowest point if possible. The removal of the appendix in this class of cases has been hotly debated. If the appendix is found after the simplest examination, remove it; otherwise, leave it. Recurrences of appendicitis after an abscess of the appendix has been opened and drained, occur in about ten per cent of the cases. It is, therefore, advisable to remove the appendix in these cases, to avoid recurrence of the attack, after the patient has thoroughly recovered from the appendix abscess and there is no more drainage of pus.

The postoperative care is most important and the success of the operation frequently depends upon it. Fowler position is used in the majority of drainage cases. Proctoclysis is given almost invariably for twenty-four or forty-eight hours, or until water can be taken by mouth freely. Glucose, alone or with soda, is added to the proctoclysis if it is deemed advisable. Hot bicarbonate soda solution is given by mouth as soon as the patient asks for a drink; when there is no nausea or vomiting, tap water is given in increasing quantity. Morphine should be given in sufficient quantity to make the patient comfortable. It should never be withheld if the patient is suffering. Cathartics should never be given; many deaths have been attributed to purgation. In their place, use from two to four ounces of olive, or cottonseed, oil as an enema, on the evening of the second or third day, to be retained over night if possible without discomfort. The following morning, use from one-half to one pint tap water as an injection. This procedure can be repeated daily until the bowels act normally. Liquid nourishment is begun on the third to fifth day and soft food is gradually added; the giving of solid food is usually delayed for from seven to ten days. When the patient's condition will permit, the sooner he is out of bed the better. The non-drainage cases usually get out of bed in five to seven days and may return to light work in from two to three weeks.

These life-saving details have been carried on in fifty-eight cases of acute appendicitis which we have operated upon in this hospital during the past three years; these have failed us four times. The cases operated upon have covered every phase of acute appendicitis from the mildest attack to large abscess. The leukocyte counts have ranged from 4,800 to 37,800. We have learned that the subjective symptoms and the physical and blood findings, must be correlated in order to arrive at a diagnosis.

The following four cases are interesting

from the standpoint of the leukocyte count and illustrate the importance of early diagnosis and early operation. Early operation is not only a life-saving procedure but, from an economic standpoint, is of great importance to the vast majority of patients. If operated upon early, complications are avoided and the patient is restored to health quickly and is saved the expense of long hospitalization.

Case 5049, Mr. J. E. G., aged 41, realtor, was admitted November 15, 1924. At 2 p. m. the patient was awakened with pain in the abdomen, which increased severity. Pain was first general but localized in the right iliac region. There was a marked tenderness and rigidity over the right iliac region. The patient was seen five hours after onset of pain. Leukocyte count 29,900; polynuclears 94 per cent. Operation was performed one hour later by inversion method, which revealed a much enlarged edematous appendix. Abdomen was closed without drainage. Patient was up on the sixth day; left the hospital on the eighth day, cured.

Pathological findings: Section showed diffuse polynuclear infiltration area with necrosis.

Case 6826, Mr. H. W., aged 56, cook, was admitted March 18, 1925. Twenty-four hours previous to admission, patient was seized with pain in the lower right quadrant of the abdomen, became nauseated and vomited. The pain was generalized at first but, after three hours, localized in the lower right iliac region. Had no medical attendant until shortly before he was admitted to hospital. Examination revealed a marked rigidity and tenderness over the entire abdomen, most marked over the right iliac region. Temperature was 100; pulse, 120; the leukocyte count was 4,800, with polynuclears 94 per cent. Operation revealed a ruptured gangrenous appendix with large amount of fluid in abdomen. Appendectomy by inversion method was performed. Abdomen was closed with drainage. Patient made a most satisfactory recovery and left the hospital April 6, 1926, cured.

Pathological findings: Section showed diffuse inflammatory infiltration and necrosis.

Case 8385, Mr. E. S. Y., aged 47, rancher, was admitted January 1, 1926. Patient dates trouble back about two months, when he had a severe pain in the right side. Physician made a diagnosis of appendicitis and advised operation, which was refused. Patient was in bed three days during this illness. Two days previous to entering the hospital, patient had severe pain in the right side and his physician advised him to enter the hospital for immediate surgical treatment. This advice was not taken and it was not until the pain was excruciating that he consented to operation. Examination of the abdomen showed it to be markedly distended, with generalized muscle rigidity and tenderness most marked over the right iliac region. Diagnosis of acute appendicitis with probable rupture was made. The leukocyte count was 35,800 with polynuclears 88 per cent. Operation revealed a large gangrenous appendix filled with pus and a large amount of exudate on the intestine adjacent to the appendix. The ligation and drop method, leaving the stump free, was used, as the head of the cecum was too edematous for purse string suture. Abdomen was closed with drainage. Patient made an exceedingly satisfactory convalescence and left hospital February 4, 1926.

Pathological findings: Appendix covered with plastic exudate. Section showed diffuse polynuclear infiltration and there was extensive necrosis.

Case 5941, Mr. E. A., aged 20, was admitted August 20, 1924.

History: No hereditary diseases in family history; mother's health is fair; father deceased, cause unknown; patient had four brothers and two sisters, all in good health. Patient has had all usual diseases of childhood, made a good recovery; tonsillectomy three years ago; and has pulmonary tuberculosis. Patient suffered severe pain for four days in the lower portion of right abdomen, with vomiting and constipation. Pain became much worse and, on the date of admission, he was unable to arise from bed.

Chest findings: Anterior and posterior vocal fremitus; prolonged expiration of upper and middle lobes; few rales at apex both anterior and posterior; plastic pleurisy at base extending around right lung to left chest, anterior. Increased vocal fremitus; prolonged expiration; delayed resonance from fourth rib to apex; rales over the entire lung from base to apex; posterior much the same condition, rales over entire lung.

Examination showed marked rigidity over entire abdomen, tenderness over the lower portion of the right iliac region, with a definite fixed mass. Incision over the center of the mass revealed a large abscess from which a concretion was removed. Appendix was not sought for. Large drainage tubes were inserted. Patient had a stormy convalescence but made a satisfactory recovery and left hospital November 24, 1924.

DISCUSSION

DR. A. M. TUTHILL:—Acute Appendicitis is like any other acute operation, the main point being to get in and get the appendix out with as little harm as possible. There is one point on which no one has laid any particular stress and that is the triangle of hypersensitiveness in acute appendicitis; this runs from the umbilicus to the crest of the ilium, from there to the right pubic spine and back to the umbilicus. Elicit the hypersensitiveness by picking up the skin with force; the very moment you grab that area, if the appendix is in that triangle, the patient will not let you make any mistake and his hand will grab yours. If you find this area of acute hypersensitiveness of the skin, everything else pointing to a surgical condition, it is almost certain that you have acute appendicitis. Have found this sign in three cases since reading the articles of and Livingstone.

I do not think it matters whether you cover the stump or not; I usually do not, but that is a personal preference. We can lay more stress on Murphy's old sequence of symptoms than perhaps any other picture we have; first, pain; second, nausea; third, temperature.

ANESTHESIA IN ACUTE APPENDICITIS

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The choice of the anesthetic to be used in different surgical procedures is rather interesting and certainly one of very great importance. With all the complications, both medical and surgical, the personal equation of the patient, the nervous temperament and peculiar idiosyncrasy of every individual to be considered, the choice

gives surgeon and anesthetist all the opportunity in the world to display their judgment—and what a valuable asset to one of our profession is judgment! How often we see the man with clever tongue or nimble fingers do his little immediate job so well! Then we get to thinking of his judgment in doing just what he did, and of his results, and we wonder.

I shall not go into detail about the advances made in anesthesia during the past ten or fifteen years, but I can say that we do not, as yet, have a perfect anesthetic and I am sorry that we do not, but hopeful that in the near future we may have.

Chloroform has been practically abandoned in this country, for its dangers are well known. Ether is no longer considered the ideal anesthetic for the general surgeon, because pulmonary and gastro-intestinal complications after operation are frequent and so often disastrous to convalescence or even recovery. Besides, its taste, smell and post-operative effects are obnoxious to the patient. Its administration to the badly injured or seriously ill patient requiring a major operation, may be the deciding factor of danger and its use in minor surgery is certainly no longer justifiable. In fact, it has gotten to the point where the public, in many localities, have been educated and will not consent to its use, and the patient comes to the surgeon questioning about the kind of anesthetic which is to be administered. It is a standing joke among the surgeons of New York whose patients are among the wealthiest, that the average patient will permit any one of a dozen surgeons to operate, but demands and will have none other than one anesthetist. Incidentally, his fee is \$500 or nothing.

Nitrous oxide and oxygen anesthesia has supplanted ether in many clinics, for its advantages over ether are many. However it may be a very dangerous anesthetic in unskilled and untrained hands, for, unquestionably, there have been many deaths which may be attributed to its use. But, statistically, it has been shown that the high mortality has been due to its use by the untrained man. As a profession we are too prone to do this—just deciding that, since we can give ether, or perhaps chloroform, we also can give nitrous oxide and oxygen. The result is that this man or that tries, and he does not know his machine, his narrow margin between life and death.

And then we have ethylene, the last of our gases to be used generally, although it was first used, I believe, some forty years ago. Gwathmey has shown—and I believe

the other leading anesthetists agree—that the margin of safety afforded by ethylene is greater than that of nitrous oxide and oxygen, nitrous oxide and oxygen plus ether, or ether alone. Relaxation is rather difficult to obtain with nitrous oxide and oxygen, easier with ethylene. In 1923, Drs. Luckhardt and Carter, after much experimenting with ethylene gas, suggested its use as a surgical anesthetic. Dean Lewis and W. E. Brown, I think, were the first to employ it, believing it to be a safe and satisfactory anesthetic. And then, as with so many new things, we became over-enthusiastic and at last thought we had the perfect anesthetic. It is not that, but a very valuable addition to what we have had in the past. The gas was known to be very explosive, and this was emphasized by the early workers. There have been some explosions which were due to carelessness and some due to static spark, which was little understood at first, and no safeguards were employed in the machines to cope with this danger. The modern gas machines are made to carry off the static electricity and ground it, so that the danger of an explosion from the static spark is nil. It is unsafe to use a cautery or free flame of any kind in the operating room during the administration of ethylene. Another objection to its use is its disagreeable, sweetish, sorghum odor. We get around this by starting and finishing the anesthetic with nitrous oxide and oxygen. The operating team and nurse soon become accustomed to it. Different patients react differently to it as to post-operative effects, and it is an open debate as to the amount of post-operative toxicity in comparing nitrous oxide and oxygen, and ethylene. The personal equation of the administrator and the economic equation both have influence, because, by rebreathing a great deal, we can administer the gas more cheaply but with more toxicity. The advantages are many: the ease and quickness of induction, the prompt awakening after operation, relaxation which will permit major abdominal operations and the reduction of fractures of long bones and dislocation of larger joints. Sometimes ether must be added to get this to the full, but a cooperation between anesthetist and surgeon is most important to get this deep relaxation. Ethylene does not stimulate the respiratory center and, hence, the respirations are smooth and regular and resemble those of normal sleep. The skin is closed and dry and the patient's color remains good if the proper mixture is used. There is no extensive secretion of mucus during the period of anesthesia. The

awakening from ethylene anesthesia is prompt and without too much excitement. As it has very little effect upon the blood pressure it is especially valuable as an anesthetic for the badly injured. I have elucidated a little fully on ethylene because it is the newest gas. Personally, I prefer that the surgeon make the choice of gas, and I frequently find, when one does not give the desired results in a patient that the other will.

As to local anesthesia, the idea of performing painless operations on a conscious patient is probably as old as any other modern development. The recent wide-spread use of local anesthesia is based on the discovery of the anesthetic properties of cocaine (well known to Indian healers), its isolation from cocoa leaves and its first use in eye surgery by Koller in 1884. This date marks the beginning of rapid development, mainly in two directions: The technique was evolved step by step; careful anatomical studies revealed exact landmarks for approaching nerve trunks; methods of infiltration, peripheral and central nerve blocks were described. The development of the pharmacological side of the question has not been so rapid and is by no means complete. Yet important steps may be noted here. Cocaine, except for surface anesthesia, has been replaced by the much less toxic novocain. The object of further development would be to find a still less toxic and more active anesthetic, that will alleviate post-operative pain for at least the first hours after operation. But in local anesthesia we should have the patient's age and psychic state, in addition to the absence of localized or generalized infection, to consider. Its advantages are: the diminution of post-operative pulmonary complications; the absence of heart, liver and kidney damage; the diminution of gastro-intestinal and bladder paralysis; and the possible co-operation of the patient. But will you not agree with me that the relationship between local and general anesthesia is not that of rivalry? We are so prone to become the slaves of a hobby or set idea; but, after all, the brand of a big man in contradistinction to the small man, is broad mindedness and common sense. Both local and general anesthesia have their advantages in certain types of patients and certain regions of the body, and, surely, they can be combined to a great advantage, especially in abdominal surgery.

Thus we have had a rather sketchy review of our more used anesthetics of the present period. Now, given an acute lower right-sided abdomen; the patient already

somewhat toxic; the muscles in their characteristic rigid spasm; the intestine, with its characteristic natural knowledge of protectiveness, quieter than usual (unless some over ambitious doctor has administered salts or oil, or both): what procedure should we follow in regard to choice of anesthetic? The patient has suffered great pain, is nervous and apprehensive, and may not be a good subject for purely local anesthesia. We know the dangers of chloroform. Ether is unpleasant, is very toxic, has a tendency to cause post-operative pulmonary and gastro-intestinal complications (particularly the latter because, to begin with, the gastro-intestinal tract has been grossly insulted). So will you not agree that the following procedures have proved to be the most successful? First, local anesthesia if the patient is mentally so constituted. Second, general anesthesia of either ethylene or nitrous oxide and oxygen-plus, possibly, a little ether if there are no pulmonary complications. Third, even better, the general can be combined with an abdominal infiltration of novocain or with an abdominal wall block, which, if well done, not only anesthetizes the incision but relaxes the rigid and spastic abdominal wall. The general anesthesia, therefore, need be really only an analgesia or exceedingly light anesthesia. About five-sixths to nine-tenths of the general anesthetic is saved in this way, you do not use sufficient local to increase the already existing toxicity of an acute abdomen, nor do you use enough general to endanger the patient's life (even though you may have a great fear of gas anesthesia) nor to increase the toxicity from the gas. And consider the shock, whether peripheral nerve or psychic, and sometimes I think the latter more damaging than the former, at least, it is more lasting. With a local infiltration or local block, you are cutting off the nerve impulses, which nothing but really a dangerously deep anesthesia can do, and hence there is a reduction of shock. With the light gas anesthesia you cut off the mental shock—the extreme fear, which any of you doing local work know, and which does not seem to harm the patient immediately but which lengthens convalescence. To be sure, if you have the phlegmatic-stoical type of patient, unexcitable and unemotional, use your local. Having been assistant attending surgeon to several of the large closed staff hospitals back East, I naturally got a great many of the acute lower abdomens to do, as the chiefs did the clinics and not many of the emergencies. Always having been interest-

ed in anesthesia along with the surgical side, the resident doctors and I would study and chart and try the different anesthetics and methods. Certainly the combined method, from the standpoint of ease of operating, from the standpoint of safety, from the standpoint of post-operative sequelae, and from the standpoint of convalescence, in our limited judgment seemed to prove the best.

In the series of acute appendix cases studied at this meeting, of the operative cases there were but two post-operative pneumonias, and both were following ether administration.

SUMMARY

1. Anesthesia has taken its place as an important and exacting part of surgery, and the choice of the anesthetic is a personal equation, requiring skill and judgment of surgeon and anesthetist.

2. Chloroform has been practically abandoned in this country on account of its dangers.

3. Ether is no longer considered the ideal anesthetic.

4. The gases have supplanted ether in our better clinics, but, at times, are most effective when a little ether vapor is combined with them. The choice of gas is often difficult, but certainly it is best to be equipped with both so that, if one is not efficacious, the other may be.

5. Local, in some cases, has its advantages; but the type of patient, the surgical condition, and the region of the body to be operated, should be considered. Also, the skill of the administration is an important element.

6. Of the pneumonia deaths following operations of acute appendicitis, in the series studied tonight, both followed ether administrations.

7. In acute appendicitis the anesthetic of choice is (1) local, either infiltration or block; (2) nitrous oxide and oxygen, or ethylene; (3) nitrous oxide and oxygen, or ethylene, plus ether; (4) possibly preferable, gas analgesia with novocain infiltration or novocain block.

GENERAL DISCUSSION

DR. G. M. BROCKWAY, speaking of the observations of the infrequency of appendicitis in a very young children, and of foreign bodies in the appendix, recalled a case where appendix was removed from a three year old child and there was a pin protruding from the end of the appendix. He also spoke of the possibility of confusing the symptoms of urinary calculus with those of appendicitis, reciting a case where the symptoms were more like those of calculus, with blood in the urine and absence of muscle rigidity and nausea. Operation showed a gangrenous appendix.

THREE CASES OF SCARLET FEVER OF UNUSUAL INTEREST OCCURRING IN THE SAME FAMILY.

J. A. RAWLINGS, M. D., El Paso, Texas

I wish to report three rather interesting and unusual cases of Scarlet Fever that have recently come under my observation:

The first case is one of anaphylaxis occurring in a boy of ten, one of a family of eight children, the eldest sixteen years and the youngest nine months. The family lived in a very small house, where it was impossible to segregate properly the sick from the well; besides, reduced finances forced the mother to have the care of both the sick and the well. The first case of scarlet fever occurred in the eldest child, a sixteen year old boy, on Dec. 7, 1926. The case was then in the hands of another physician who gave the boy a curative dose of scarlet fever antitoxin, and the other seven children were given prophylactic doses.

The boy who received the curative dose had a mild attack of the disease without complications. In about three weeks, three other children came down, but had mild attacks. On January 7th, a boy of ten was stricken and was seen by the attending physician the following day. He appeared much sicker than the others, with a temperature of 104, bad throat and pronounced rash, so the doctor thought best to give a curative dose. This was given at one o'clock. In less than half an hour the boy showed signs of anaphylactic shock, with great difficulty in breathing, rapid pulse, cyanosis and signs of pulmonary edema. The physician was called back and, at once, gave the boy a hypodermic of atropine, and adrenalin by mouth. The boy vomited and seemed relieved, so the doctor left but later had a phone message saying the boy was much worse. It was then that the doctor asked me to see the case. We hurried to the bedside but the boy passed away just as we reached the house. The length of time elapsing between the giving of the antitoxin and death was a little more than three hours. Later, by questioning the mother it was found that the boy had an attack of asthma when about four years of age.

The doctor did not see the family again for several days, so that, when another child was taken sick, he asked me to take charge, which I did.

This case proved to be a two and a half year old boy whom the family thought had escaped the disease. When seen, this child had a red throat, some cough and coryza and a temperature of 104, but no rash de-

veloped and on the second day the urine showed blood macroscopically and, upon microscopic examination, showed all kinds of casts, much blood, and two plus albumen. The boy was having an acute and severe hemorrhagic nephritis. My belief is that this boy had a mild case of scarlet fever and, in the absence of the doctor, had been overlooked by the family. In no other way can I explain the severe nephritis. Under appropriate treatment he is now making a good recovery.

A fourteen year old girl, who was one of the three who had the disease, as already mentioned, was also found to be suffering from a severe nephritis and was ordered to bed and placed on appropriate treatment. Because she did not appear very ill, the mother could not see the importance of keeping her in bed, so, one day when the girl complained of a severe headache, the mother allowed her to get up and dress. In fact, I found later that she was not following directions well at all. So, on this day, about eleven a. m., twenty-three days after her initial symptoms, she developed severe convulsions and became somewhat comatose. My associate, Dr. Harry Leigh, saw the patient and gave two doses, 2 cc. each, of fifty per cent magnesium sulfate intramuscularly, about one hour apart. This controlled the convulsions. The girl was taken to a hospital where the magnesium sulfate was continued at eight to twelve hour intervals for thirty-six hours, with hot packs and diuretics. No more convulsions occurred and the girl soon showed marked improvement. At this writing, three weeks later, the urine is nearly clear of casts and albumen. In the beginning, both this girl's urine and that of her younger brother, contained much blood and albumen with numerous casts, especially granular.

The lessons to be learned from these cases are several:

(1) The curative dose of antitoxin is unquestionably beneficial, cutting the disease down more than one-half in time and severity, and practically doing away with complications; but, like diphtheria antitoxin, it must be given in the first forty-eight hours of the disease to be most effective.

(2) Prophylactic doses protect for only a few days, perhaps a week or ten days at best, and their use is questionable.

(3) Both curative and prophylactic doses, in nearly all instances, cause severe horse serum reaction, starting in from four to seven days, sometimes later. This anaphylactic shock may be dangerous and

sometimes fatal. In nearly all cases there is a high temperature, marked general adenitis, arthritis, urticaria and intense discomfort and itching. Usually these symptoms are transitory and pass away within two to five days, without serious result. In a very recent article just published, A. R. Dochez recommends that, because of these untoward symptoms following the prophylactic dose, and because of its questionable value, it is best to wait until the child shows positive signs of the disease and then give a curative dose. But he also believes that even the mildest cases should have the curative dose in order to prevent complications.

(4) Mild cases of scarlet fever, so mild in fact that they are often overlooked, as in the case of the two year old boy, may be followed by a severe nephritis. These types, passing undiagnosed and undetected, are the dangerous types that spread the disease.

(5) Be guarded in giving any horse serum antitoxin to any individual who has had the serum before, or who has a history of hay fever, asthma or urticaria. Give a small amount into the skin and await results before giving the whole dose. My experience is that both tetanus and scarlet fever serums produce reactions more often and of a more serious character than does diphtheria antitoxin.

(6) I believe we have a most helpful agent in magnesium sulfate to be given either intravenously or intramuscularly in the treatment of uremic convulsions following nephritis either of the ordinary type or that due to pregnancy.

(7) In combatting the anaphylaxis due to these horse serums our best agents are adrenalin and atropine given in large doses and frequently repeated.

DISCUSSION

DR. E. W. RHEINHEIMER stated that he was a strong disciple of scarlet fever serum. He cited a case with marked symptoms,—with a temperature of 104.5 at 11 a. m., when curative dose was administered. At 8 p. m. temperature was 99, the next day normal, and remained so. In every case in which he has used it the temperature has been normal the following day. However, serum sickness developed in every case except one. He asked the question, "Should a child who has had serum sickness receive toxin-antitoxin for diphtheria?"

DR. R. A. WILSON stated that after the broad experience the City Health Department has had with scarlet fever serum, he regards it as absolutely specific and that they have had no untoward results from its use. He has abandoned the prophylactic dose. The City Health Department has administered 35,000 doses of toxin-antitoxin with no record of anaphylactic reaction.

DR. HARRY LEIGH brought out that the serum albumen in diphtheritic antitoxin is almost entirely eliminated and that nothing more than serum glob-

ulin remains. This is not true of the scarlet fever antitoxin, which accounts for the higher percentage of serum sickness when scarlet fever antitoxin is used.

DR. E. A. DUNCAN warned against using antitoxin in a sensitized patient.

In closing, DR. RAWLINGS stated that he believes toxin-antitoxin can be safely given to a child who has previously had serum sickness. He gave history of an epidemic of diphtheria in Kansas City in 1894. During the epidemic he used antitoxin for the first time; it was then made in powder form. Thirty years ago he administered a prophylactic dose of diphtheria antitoxin to his wife, and she is sensitive to serum at this time.

A CASE OF AMEBIC CYSTITIS

E. B. ROGERS, M. D.

El Paso, Texas.

During the month of June, 1925, a middle aged bachelor consulted me for an affection of the bladder. According to his history the trouble had begun some three or four months previously with frequent urination, accompanied by burning pain and tenesmus. These symptoms had gradually increased in severity until at times he would have to empty his bladder once every fifteen to thirty minutes, night and day, and the tenesmus and pain became almost intolerable. For about a month he had passed blood in varying amounts, at intervals large quantities with some small clots.

Physically, aside from the bladder condition, he presented nothing abnormal. The urine was alkaline, 1020, contained much albumin and blood and a smaller amount of pus. He had diagnosed his own case as gonorrhea and had been using drugstore remedies. A slide examination did not show gonococci. On the next day the urinalysis was unchanged except that there were plugs of mucus containing pus, blood and triple phosphate crystals. Prostatic massage gave pus, which did not show gonococci. Cultures from the prostatic pus and from the bladder urine failed to produce a growth on agar. Daily specimens showed a rapid decrease in the amount of blood, and at the same time the pus apparently increased so that on the third day the blood and pus were about equal in amount. On the fourth day the pus predominated. Since the only organisms ordinarily found in a non-fetid pyuria, that fail to grow on agar, are the gonococcus and the tubercle bacillus, a careful search was made for the latter, but without result. Two glass and three glass tests all gave about the same amount of pus.

Ten days after the first examination there was a sudden increase in the hematuria, which subsided like the one described. A cystoscopic examination showed only an acutely inflamed bladder, most marked in

the area of the trigone. Just within the vesical sphincter was a point of hemorrhage where arterial blood was spouting up like an artesian well. The field was so quickly obscured that the possibility of a small ulcer could not be determined. The ureteral catheterizations gave a trace of albumin on each side but no pus or blood.

The case was at first placed on medicinal treatment; diet, with increased fluids, hexamethylene with urinary acidifiers, and bladder sedatives. It might be noted that sodium benzoate failed and the urine could not be acidified except with unusually large quantities of acid sodium phosphate. After a few days local treatment was begun in the form of daily injections of one ounce of one per cent protargol into the bladder. After about a month a single clear specimen of urine was obtained but on the next day the blood and pus had returned. During the second month endoscopic treatments of ten per cent silver nitrate were applied once a week to the bleeding area at the vesical neck.

The subjective symptoms had been considerably relieved, but the intermittent attacks of hematuria persisted and the amount of pus varied greatly from time to time, being heaviest immediately following the hematuria. After the urine had stood in a glass for a time there would form in the bottom, a glairy, mucoid clot one-half to one inch in thickness which would be white if only pus was present or pink to red with varying amounts of blood. During a period of hemorrhage the centrifuged specimen would present an almost unbroken field of red cells. In three or four days the picture would change to pus with only a few red cells. Then the pus would diminish day by day until the next hemorrhage came on. In September, during a more protracted pyuria stage, there were noted numbers of cells that had all the appearance of amebic cysts. They were round, immotile, encapsulated by a heavy membrane, and contained two to four cell inclusions. The protoplasm was slightly granular and occasionally contained small vacuoles. Stained specimens gave the typical appearance of cysts and definitely excluded the round epithelial cell that often appears as a desquamation product in the later stages of cystitis. After studying specimens for a week in conjunction with my office colleagues we decided that the cells were amebae in the resting stage.

Treatment was now changed to a daily injection of emetine into the bladder. Beginning with one grain in one ounce of sterile water the dose was increased to two

grains in one and one-half ounces of water and continued for two weeks. The symptoms were relieved, and the pus gradually diminished until it disappeared altogether. No amebae were found after this time and the urine culture was still negative. The urine remained clear and the patient seemed to be permanently relieved. Some months later he moved to California and has not since been heard from.

The diagnosis of amebic infection of the bladder has, in the past, invited much criticism. Dobell in his work on "Amebae Living in Man," cites twelve cases reported by various authors, and comments unpleasantly. One case he admits as "probably authentic," as he had known the worker personally. It seems as though he felt the condition to be impossible because he had not personally seen a case. Cases have now been reported by Kartulis, Posner, Walton, Macfie, Allen J. Smith, Petzetakis and others. Amebae have been found in almost every other part of the human body, why not in the bladder? No doubt cases are overlooked because of failure to follow up each case with the laboratory technic necessary to stamp the condition as a non-bacterial infection, which should lead one to search for protozoa.

Every case of amebic cystitis should have a demonstrable etiology, since this cystitis as well as other forms must be secondary to a focus of infection elsewhere in the body. The case here reported had no history of dysentery and no amebae were found in his stool on a single examination. However, since he belongs mentally with the "submerged one-tenth," the history may not be reliable. He lived with a brother-in-law who had had for years a chronic amebiasis.

The symptoms that might lead one to think of amebic cystitis are frequency, both day and night (pollakiuria), severity of the tenesmus and pain, and alternating hematuria and pyuria. Then when no organisms can be found in the stained specimen and cultures show no growth, search should be made for protozoa. The diagnosis of amebic cystitis is made in this case because of these symptoms and laboratory findings; because of the constant presence of cells that had both the histological and the staining characteristics of *Endameba histolytica*; and because of the therapeutic test,—the organism and the symptoms disappearing and the patient recovering after treatment with emetine. Usually the treatment has been by hypodermic injections of emetine. I can find no record of any case having

been treated by injections of emetine into the bladder.

DISCUSSION

DR. G. WERLEY asked why the amebae were at the rest stage in this case. It was his opinion that the strongest point in favor of a diagnosis of amebic cystitis was due the fact that emetine produced the cure. The absence of motile amebae and the fact that all observed were encysted, strongly suggested to him the possibility of these being blastomycetes.

DR. K. D. LYNCH would not believe that relief from emetine treatment proved the diagnosis. The sudden absence of pus and the clear urine for one day, to be followed by pus on subsequent days, suggested the possibility of a fistulous communication between the bladder and rectum.

MAJOR CRAFT believed that amebic infection of the bowel sufficient to produce erosion of the bladder would be accompanied by sufficiently marked symptoms as to be outstanding.

DR. F. D. GARRETT stated that the presence of amebae in the urine was not conclusive proof that they were the etiological factor in the cystitis, he believing that too much importance is attached to the mere finding of amebae, as often more detailed study will prove they are not pathogenic. In his work, unless there are gastro-intestinal symptoms he does not make a diagnosis of amebiasis on the mere presence of amebae in the stools.

DR. HUGH CROUSE has gotten good results from stovarsol and calcium carbonate intravenously, in amebic cystitis.

DR. JAMES VANCE thought there was an unusual amount of pus present for so small a lesion as Dr. Rogers described, and was rather inclined to feel as Dr. Lynch,—possibility of an existing fistula.

DR. E. B. ROGERS: I do not believe it follows, as mentioned by Dr. Werley, that if the condition in the bladder is an acute process there should be found moving, vegetative amebae in the pus. I have repeatedly found cases of chronic amebic colitis having acute exacerbations, with blood, pus and mucus but only amebic cysts in the stools. Half of the reported cases of amebic cystitis had only cysts, no moving forms having been found. Of course the amebae burrowing in the mucosa must be motile but on leaving the membrane they at once assume the precystic or the cystic stage. There is a possibility of mistaking the amebic cyst for blastomycetes if microscopic examination alone be depended upon. Even then some budding forms should be found and the organism should be grown on agar. The cystoscopic appearance of the bladder mucosa should differ from the congestion of a simple acute cystitis; there should be blastomycetic nodules and thickenings of the mucosa or ulcerations. Such a form of cystitis has not been described apart from generalized blastomycosis, and ninety per cent of these cases die.

A diagnosis of cystitis due to amebic cysts will always be open to doubt and criticism. I cannot explain the rapid changes in the amount of pus. Had it been due to a fistula, or the evacuation of an abscess or diverticulum it would seem that some organism, such as the colon bacillus should have been present. I am sorry that I have no permanent specimens. After beginning the emetine treatment the cysts disappeared before I realized that the opportunity of getting them had passed.

YAVAPAI COUNTY MEDICAL SOCIETY'S BI-MONTHLY POSTGRADUATE STUDY

At the regular bi-monthly joint meeting of the Yavapai County Medical Society (Arizona), and the Fort Whipple Hospital

Staff, held at the Yavapai Club, Prescott, Ariz., February 1st, the three groups showed one hundred per cent attendance, as follows:—Group I, Drs. Brooks, Allee, McWhirt, DeWitt, Seibert; Group II, Drs. Looney, Yount, Loewy, Gatterdam, Bassett, McClarty, Matschke; Group III, Drs. Benedict, Southworth, Allen, Carhart, Jones, Devine, Flinn. Drs. Buck, Herrick and Rene were judges.

Group II had been assigned Cabot's Case No. 12493 (Boston M. & S. Jour., Dec. 9, 1926).

Group III had been assigned Cabot's Case No. 12411, (Boston M. & S. Jour., Oct. 14, 1926).

Mimeographed copies of the histories of these cases were distributed to each member of the society and staff, withholding the discussions and the necropsy findings.

On behalf of Group II, DR. R. N. LOONEY read the history of their case, as follows:

A German widow sixty years old entered August 10 complaining of jaundice. When she was nineteen she had an attack of jaundice with nausea and abdominal pain, not localized. She was in bed two weeks and out of work six weeks, with no severe pain or high temperature. When she was 42 she had attacks of sharp right upper quadrant pain of sudden onset lasting three hours, accompanied by nausea, relieved by "injections." The attacks occurred at any time of day. After them there was tenderness for a week or two. She had four of these attacks in the next ten years. When she was 52 her husband died suddenly. She was ill with another attack, with jaundice for the first time since the attack in her girlhood. After this she felt very well until ten weeks before admission. Then she lost appetite, especially for meat. When starting to eat breakfast she felt weak, with fullness in the epigastrium relieved by soda, milk and belching of gas. Six weeks before admission she noticed that her chest was yellow. The color had now spread to her face and arms and had grown more intense. She was in bed two weeks. For six weeks she had had difficult and painful micturition. For five weeks she had had edema of both legs. Four weeks before admission she began to vomit, at times coffee ground material but usually greenish, not bloody. The vomiting occurred especially on standing up. There was pain in the lower right quadrant, relieved by moving the bowels. Her appetite was poor in the morning, fair in the afternoon. The stools were loose, yellow and clay colored. The belching of gas and passage of gas had increased. Ten days before admission her hemorrhoids came outside and were replaced with great difficulty. She was more dyspneic than usual. Two days before admission she had a real chill. For two days her urine had been reddish brown. F. H. and P. H. of no importance.

Examination showed a well nourished woman with deeply jaundiced skin and sclerae. The teeth were all false. The heart and lungs were normal. There was tenderness in the left lower quadrant. Pelvic examination showed a lacerated perineum, cystocele and rectocele; no other abnormalities. Rectal examination showed the sphincter lax, several inflamed hemorrhoids. There was slight pitting edema of both ankles. The amount of urine is not recorded, specific gravity 1.010 to 1.020, red at one of four examinations, a very slight trace to the slightest pos-

sible trace of albumin at four of five, bile at all of five sediment examinations, occasional leucocytes at two, occasional red cells at one. The blood is not recorded, except leucocytes 9,000 to 10,000, hemoglobin 85 per cent, 3,200,000 reds. A Wassermann was negative. Icterus index 90. Bleeding time 5 minutes, clotting time 8½ minutes. Van den Bergh immediate reaction was positive. The stool showed bile. X-ray showed no evidence of organic disease of the stomach or duodenum. The stomach emptied very rapidly.

Dr. Chester M. Jones, in giving his diagnosis, said, "I am unable to explain the left lower quadrant pain and tenderness."

The patient was given 10 cubic centimeters of 6 per cent calcium chloride at 10 a. m. and 9 p. m., August 15.

August 16 operation was done. She made a good ether recovery and was comfortable two days later. The drainage was not excessive. The morning of August 19 the temperature began to rise. There was profuse drainage of bile stained serum from the wound. The patient vomited a great deal that day and in the evening looked very ill. She failed rapidly during the night. The morning of August 20 there were many coarse bubbling rales throughout both lungs.

The temperature, which was 101 deg. the evening before dropped to normal, but the pulse rose to 110. That noon she died.

DR. R. N. LOONEY: This woman was of the cancer age. Did she have cancer of the pancreas, bile tract, stomach or elsewhere? Or was the trouble due to gallstones with chronic pancreatitis and septicemia following operation? Our group has agreed on a diagnosis, which will be stated by our last speaker.

DR. E. A. GATTERDAM presented the first discussion, summary of which is as follows: The essential point in this case is that the patient is a woman of cancer age with pain in the upper right quadrant, requiring morphine for relief. There are a number of things to think about, such as appendix, kidney, gall bladder, stomach, duodenum, liver, and, in a woman, ovaries and tubes. The symptoms in this patient began in early life (age 19), with jaundice and pain, so naturally we think of the gallbladder and liver. After several attacks without jaundice, she has another one (age 52) with pain and jaundice, possibly another gallbladder attack. In person of this age, pain in that region with tenderness and jaundice probably means more than ordinary gallbladder disease or stones; it is the age when carcinoma is apt to occur. In recalling the anatomy of the gallbladder, we remember that it drains into the common duct which first joins the pancreatic duct and then empties into duodenum. This is a natural point for stone to lodge, and blocking the duct at this point backs infection into the pancreas, resulting in chronic pancreatitis.

I once heard Dr. Mayo say that, given a case of this age, with pain in the upper right quadrant, referred to the back, with jaundice or vomiting later followed by pain and jaundice, he would make a diagnosis of carcinoma of the gallbladder or duct over the telephone. In carcinoma of this region, the most common site is carcinoma of the stomach. Carcinoma of the duodenum is very rare as a primary lesion. Carcinoma of the gallbladder or common duct is quite common following repeated attacks of gallbladder disease or lithiasis. In this patient, we need to consider whether there is carcinoma of the stomach, gallbladder or pancreas. The only evidence of stomach cancer is the uncertain record of bloody vomiting. The x-ray examination was negative except for rapid emptying, which may occur from irri-

tation about the duodenum, e. g., duodenal ulcer, gall-bladder disease with adhesions, enlargement of the head of the pancreas. The head of the pancreas, when enlarged, may encircle the duodenum or common duct. There are probably several factors in this case. It was apparently considered a surgical case and probably operated without positive diagnosis. The surgeon probably considered stones to be present, with possibly other complications. He thought that removal of stones would be indicated, and if chronic pancreatitis was present, this would be benefitted, and if cancer were found, operation would do some good.

In disease of the pancreas, we remember that any enlargement will cause obstruction of the duct, just as stone in the duct would do. In tumors of the pancreas, carcinoma is the first thought; in that condition, the onset is fairly rapid, with emaciation, loss of appetite, clay colored stools and general symptoms of carcinoma; this patient gives a long history which does not look like carcinoma of the head of the pancreas.

Acute pancreatitis is much more sudden than this patient's attacks, with shock, vomiting and usually death in a short time. With regard to chronic pancreatitis, we look for this to follow gallbladder disease, or blocking of the duct at the ampulla of Vater. In this case, with history of pain, relieved by injections, and jaundice, it would be consistent with infection of the gallbladder, with stasis, and then stone formation. Undoubtedly, at operation, they found stones in this gallbladder, with obstruction in the common duct.

Hydrops of the gallbladder occurs when stone blocks the common duct, and when followed by infection, we have empyema of the gallbladder. There is nothing to indicate that in this case, except the long history.

Have not said anything about the kidney, because there is nothing in the case pointing to kidney stone, appendicitis, ovarian or tubal disease.

The pain in the lower left quadrant brings into question the ovary, the sigmoid or descending colon. There is nothing to point to cancer of the colon. Diverticulitis is a condition which we hear little about; usually the x-ray examination reveals it. Do not consider the lower left quadrant symptoms significant.

Our diagnosis, to be given by the final speaker, rests on gallbladder infection, in connection with which we must remember gallstones and secondary pancreatitis. We must also remember that carcinoma may stimulate gallstones or that stones may lead to development of carcinoma. The blood findings, showing markedly diminished red cells and practically normal hemoglobin occurs in carcinoma as well as pernicious anemia.

DR BASSETT continued the discussion; his remarks, summarized, were: Given a young woman with gall stone colic and repeated attacks during the following years, we must expect a certain amount of pathology in the bile tract. We have such a case; the history tells us that much and whether or not the immediate condition is an aftermath of the previous attacks is to be determined.

Infectious jaundice is not a grave disease; it is a mild condition responding readily to treatment, but it leaves behind a fertile field for further trouble. Presuming this woman to have had an infectious jaundice and subsequent attacks of biliary colic, we assume that she has an infected gallbladder with stones, cholangitis and possibly chronic pancreatitis. It would not be unreasonable to assume some cirrhosis of the liver as a result.

The woman comes in with history of having been previously sick for several weeks; she was deeply

jaundiced with icteric index of 90, completely saturated with bile. A condition like that cannot exist very long without anemia which she had to a marked degree; bile acids in the circulation result in a grave anemia frequently fatal; they have hemolytic action, and not infrequently produce a picture like pernicious anemia. As a further result of biliary acids in the blood we have also explanation for the edema of the extremities and the painful micturition, this latter condition resulting from the irritant effect upon the bladder of the bile acids excreted in the urine. Icterus may or may not cause itching; this patient had no itching. They had to choose between hemolytic or obstructive jaundice; they performed Van den Bergh's reaction which indicated obstructive jaundice and they proceeded to operate. Whether the obstructive jaundice is due to gallstones or not, we cannot say. It may result from repeated attacks of cholecystitis, which this woman had. We cannot exclude carcinoma.

DR. LOEWY presented final conclusions: It has been truly said that persons seldom die from what ails them. We consider that this woman has had gallbladder disease for 18 years. At the age of 42, she suffered attacks without jaundice; gall stone blocks the passage and she comes in at 60 with obstruction; whether it is stone or tumor cannot be definitely differentiated. You may have carcinoma a long time and have it light up following infection. We can rule out stomach and duodenal lesions. Lesion of the head of the pancreas should be palpable.

Our diagnosis is obstruction due to cholelithiasis, with cholangitis and pancreatitis, but carcinoma cannot be definitely ruled out.

DR. W. E. McWHIRT then read the following discussion and autopsy report, from the Boston Med. & Surg. Jour. of Dec. 9, 1926:

DISCUSSION

BY ERNEST M. DALAND, M. D.

We notice that this woman complained of jaundice; she did not complain of pain.

That attack at nineteen was apparently an infectious jaundice, which probably had nothing to do with the present condition.

Apparently these attacks of pain were due to gallstones.

I do not know that "especially for meat" means anything. It does not to me.

This is a rather peculiar story, that she had this epigastric distress at the time of eating, but it was relieved by milk.

From her history we have a woman who apparently had an infectious jaundice as a girl, who had had numerous attacks of right upper quadrant pain sufficient to require injections, probably morphia. She had had jaundice once before during one of the attacks. The present attack had been on for six weeks, beginning with jaundice. There is not much said about pain along with the jaundice. She had some gastric upset, a certain amount of epigastric distress.

I cannot connect up the urinary symptoms with the rest of the story from anything I have heard so far.

Apparently these hemorrhoids were not due to anything higher up, because rectal examination was negative. The fact that she had had these hemorrhoids come out and that they had been replaced with difficulty, the fact that she had edema of the ankles, would point to some backing up of the circulation in the lower part of the abdomen.

She has a slight secondary anemia.

The icterus index is very high. This examination all points towards an obstructive jaundice rather than a hemolytic jaundice.

DR. JOHN D. CAMP: These films show no definite change that is significant. There is a de-

formity in the first portion of the duodenum, which if we were to rely altogether on the films I think should say was an ulcer. This was supplemented by fluoroscopic examination; and the deformity present on the films was probably not constant, as we have this negative report. That illustrates why we should not rely on x-ray films alone.

DR. DALAND: This woman had obviously had gallbladder disease in previous years, and I think that the most likely diagnosis in view of that is that she had a stone in the common duct. She did not complain of much pain during the six weeks that she had this jaundice. I think patients are pretty apt to have pain at the time the stone goes down into the common duct.

The other possibilities are a carcinoma of the gallbladder or a malignancy of the head of the pancreas.

The patient had a chill two days before she came. That might indicate some reaction in the liver such as would be given with a cholangitis. She had a normal white count, so that it is not apparent that she had any severe gall bladder infection.

I think probably she had stone in the common duct. I doubt very much that she would have been explored so quickly if they had thought they were going to find malignancy.

DR. DALAND'S PRE-OPERATIVE DIAGNOSIS

Stone in the common duct.

PRE-OPERATIVE DIAGNOSIS

Stone in common duct.

OPERATION

Gas-ether. A seven-inch incision over the gallbladder. The gallbladder was distended and slightly thickened, but contained no stones. The stomach was normal. The kidneys and spleen felt normal. There was a definite hard swelling of the head of the pancreas, and the body and tail of the pancreas were slightly swollen. No stones were felt in the common duct. "The diagnosis is obviously carcinoma of the head of the pancreas." A cholecystogastrostomy was done in the same method as a gastroenterostomy, using two posterior and three anterior layers of number 0 continuous catgut. One cigarette wick.

CLINICAL DIAGNOSIS (FROM HOSPITAL RECORD)

Carcinoma of the pancreas.

Peritonitis?

Cholecystogastrostomy.

DR. ERNEST M. DALAND'S DIAGNOSIS

(1) Stone in the common duct.

(2) Carcinoma of the pancreas?

ANATOMICAL DIAGNOSIS

1. *Primary fatal lesion.*

Red atrophy of the liver.

2. *Secondary or terminal lesion*

Icterus.

Hemorrhage into lung tissue involving a large portion of each lung.

Hemorrhage edema of the lungs.

Slight arteriosclerosis.

3. *Historical landmarks*

Slight chronic pleuritis, right.

Obsolete tuberculosis of a bronchial gland.

Operation wound.

DR. RICHARDSON: There was a well-marked general icterus. In the peritoneal cavity there was a small amount of thin bloody fluid but no peritonitis. The appendix was negative. The esophagus was negative.

The gallbladder was securely united with the stomach at a point about four centimeters above the pylorus. The part was in good condition, and the opening between the gallbladder and the stomach was patent. The gallbladder itself contained but little bile. The mucosa was smooth and the bile ducts were free and negative. The intestines showed moderate congestion.

The pancreas macroscopically showed a definite lesions. There was no deformity and grossly there was no evidence of new growth. Microscopically the organ was negative.

The spleen weighed 170 grams; the tissue was dark brown red, elastic, congested. The adrenals, kidneys, uterus and adnexa were negative.

Head. The meninges and vessels of Willis, the middle ears, pineal and pituitary glands were negative, and the brain, which weighed 1434 grams, showed no lesions.

The trachea and bronchi contained much bloody, frothy fluid. The apices of the lungs were negative. There were no areas of consolidation, but the tissues of each lung over large areas was dark to blackish red and markedly infiltrated with blood. Large areas then of the lung tissue showed hemorrhage. The remaining portion of the lung tissue showed hemorrhagic edema. Hemorrhage of the lung, presumably associated with the icterus.

The heart was negative. The aorta and great branches showed a very moderate amount of fibrous sclerosis.

The liver weighed only 760 grams. That is pretty small for a liver—about half size. It was fairly symmetrical. There were a few adhesions between the upper part of the right lobe and the diaphragm, these somewhat vascular. The surface generally finely to coarsely granular with areas where it was fairly smooth. The tissue generally was leathery and was bile stained. The section surfaces were generally granular, with areas where they were dark reddish, fairly smooth and rather elastic. The anterior margin of the liver was rounded and finely to coarsely granular. And there we have a mixed picture, in some places resembling cirrhosis and in others a late stage of a toxic or infectious hepatitis. Macroscopically it certainly suggested that it might be a late stage of toxic or infectious hepatitis and microscopically it was considered to belong to the so-called yellow atrophy group, late stage.

DR. CABOT: There is no organ of the body in which I have seen such frequent disagreements between surgeons and pathologists as the pancreas. We are always hearing the surgeon found this or that in the pancreas, and when we come to necropsy Dr. Richardson refuses to find it.

Group III discussed the following case record, taken from the Boston Med. & Surg. Jour. of Oct. 14, 1926:

A widowed American laundress 61 years old entered August 18 for the first time complaining of hematemesis.

Seven months before admission she suddenly felt nauseated one evening and then brought up a fair amount of bright red blood. By the advice of her physician she rested a week. Then she went back to work. Two months before admission she had a second similar attack with less blood, only half a pint and no nausea or feeling of weakness. She went back to work after two days. Eighteen days before admission, soon after being awakened by a fire alarm in the night, she brought up two quarts of bright red blood. She felt weak for a few days. Since that time she had been resting, but had no other symptoms. With one of the hemorrhages she had a "light" feeling in her head. She had tarry stools for two or three days after all the hemorrhages, but at no other time.

Her mother died of heart trouble in old age. Her first husband died of consumption after four years illness. The patient had never had children. All her life she had been quite healthy. She passed the menopause with no trouble at the age of 46. Her weight had been 205 pounds for the last ten years and was 203 eighteen days before admission.

Examination showed a very obese woman with

clear pale skin and marked pallor of the mucous membranes especially the mouth. At the left apex posteriorly there was distant bronchial breathing. Voice sound, no resonance, not increased. Tactile fremitus diminished. The apex impulse of the heart was not found. The heart was enlarged at the arch and in all directions except downward. Percussion accuracy was impossible. The aortic second sound was accentuated and snapping. There was a systolic murmur over the left sternum, loudest at the aortic area. The heart sounds were distant. The blood pressure was 190/100-165/90. The liver edge was felt two centimeters below the costal margin. There was a mass (spleen?) descending with inspiration in the left upper quadrant 4 centimeters below the costal margin. A rounded pole like the spleen or kidney presented. At pelvic examination on the table the uterus filled the left fossa. It was not tender, but seemed larger than normal. (Fibroid)? Inspection showed a normal os. The fingers showed Heberden's nodes. The pupils and reflexes were normal. Fundus examination showed normal discs, sclerosis of the vessels, a small area of hemorrhage and exudate in the nasal side of the right disc.

The amount of urine is not recorded. The specific gravity was 1.021 to 1.020. The sediment showed many leucocytes at all of these examinations, rare red cells at one. Renal function 30 per cent, polynuclears 70 to 49 per cent, reds 2,800,000 to 4,100,000, marked achromia, some anisocytosis and poikilocytosis, no stippling or polychromatophilia; platelets seemed decreased in one of four smears, slightly increased in two later stained with cresyl blue. Reticulated cells .5 to 1 per cent. Clotting time 6-9 minutes. Clot retraction poor in three tubes, good in one. Non-protein nitrogen 30 mgm. Wassermann negative. Icterus index 2. Stools negative to guaiac at five examinations.

X-ray showed slight increase in the transverse diameter of the heart on the left and a slightly tortuous aorta. A barium meal and enema showed no definite evidence of organic diseases of the gastrointestinal tract. There was slight spasm in the sigmoid, but the various portions did not appear abnormal in contour.

The patient's color improved markedly. The increase in blood platelets over normal was notable. September 2 she was discharged.

After leaving the hospital she was followed in the out-patient department by the senior house officer. Her spleen and liver remained at least the same size as at discharge. At one observation a month after she left the hospital they were slightly larger. Two months after her discharge her weight had been reduced by twenty pounds. Her hemoglobin was 60 per cent and the red count 3,720,000. The blood pressure was 200/90. In November she complained of slight dyspnea. She felt better if she took salts three times a week. At that time she felt well enough to begin working.

One morning in the middle of March, six months after her discharge, she was awakened in the night by a thunderstorm. She was nauseated, and after coughing a little brought up a big mouthful of bright red blood. The next day she had a tarry movement and felt weak. April 26 after breakfast she felt nauseated and brought up her breakfast mixed with what she thought was a mouthful of bright red blood. She had no bowel movement from time of her last hemorrhage until her admission to the hospital April 27. She felt weak and thirsty but did not remember fainting. Her memory was now very poor.

On examination she was well nourished, extremely pale, with a slight subicteric tint. The mucous membranes were markedly pale. The lungs were clear. The heart showed no enlargement to percussion. There was a soft apical systolic murmur. The abdomen was moderately obese, with questionable free fluid.

The liver edge was just felt. The spleen was questionable. Rectal examination was negative. The urine was normal in amount, specific gravity 1.018 to 1.020, the slightest possible trace of albumin at one of five examinations, rare to numerous leucocytes at all but one of five sediment examinations, rare red cells at one. Blood examination showed 6,800 to 4,600 leucocytes, 70 per cent polynuclears, hemoglobin 30 to 50 per cent, reds, 1,560,000 to 3,800,000, moderate achromia, poikilocytosis, anisocytosis, and occasional microcytes. The cells appeared smaller than normal, about one stippled cell per high power field, no nucleated red cells seen. Platelets appeared normal, not increased. Reticulated cells 5 per cent to less than 0.1 per cent. Icterus index 3-4. Clotting time 9 minutes. Bleeding time 4 minutes. Wassermann negative. Stools: guaiac positive or very strongly positive at all of five tests to May 6, negative May 7, very strongly positive May 9, negative at three later tests. Rosenthal bromsulphalein test normal.

X-ray examination with a barium meal was made in the recumbent position only. There was slight flattening of the first portion of the duodenum. There were no filling defects to suggest organic disease of the stomach or duodenum.

Consultants: Internist. "I can see no indication for operation. Do not believe she has any type of primary blood condition. Spleen just palpable at costal margin. Liver down two fingers. Both liver and spleen smaller than in September. The most probable diagnosis seems to me to be malignancy of the stomach, in spite of negative x-rays and negative gastric history. Transfuse now and re-x-ray soon."

Surgeon: "I cannot make a diagnosis in this case. Malignancy does not seem probable. I cannot feel the spleen or liver. . . It would seem hardly justifiable to do a splenectomy on the evidence we have at present."

The temperature was 97.9 deg. to 100.4 deg., the pulse 70 to 111, the respiration not remarkable.

The patient had no more bleeding. May 5 surgical transfusion of 600 cubic centimeters of whole blood was done. A laryngologist advised against esophagoscopy.

May 20 the patient ate her supper as usual, and at the rounds at 6:45 was feeling very well. At 7:45 she suddenly brought up 450 cubic centimeters of fresh blood mixed with her supper. Ten minutes later the pulse was 96, the blood pressure 150/65. There was no evidence of shock. She was given a quarter grain of morphia. At 8:45 she vomited 400 cubic centimeters more of blood. She looked washed out, but was not in shock. May 21 she bled 500 cubic centimeters more. 600 cubic centimeters of blood was transfused. May 22 she vomited about 1000 cubic centimeters of bright red blood and two hours later 800 cubic centimeters more. After having the situation fully explained to them patient's relatives decided to have no more transfusions done. May 23 the patient again vomited six ounces of blood. May 24 she died.

DR. BENEDICT, captain of Group III, after summarizing the above record said that hematemesis is due to several causes; (1) swallowed blood which seems to be ruled out here; (2) disease of the esophagus which is considered to be the cause here; disease of the stomach, usually ulcer, of which there is little evidence in this case; disease of the duodenum, also usually accompanying symptoms, which are absent here; portal obstruction sometimes gives a profuse bleeding of this character, and we think that therein lies at least a part of this woman's trouble; acute febrile diseases sometimes gives profuse bleeding, which we think can be ruled out here; diseases of the

blood may cause such bleeding and that phase will be discussed.

Profuse stomach hemorrhage will occur in one of three conditions; (1) gastrostaxis; (2) gastric ulcer; (3) cirrhosis of the liver, in which there is strong probability of producing the sort of hemorrhage we have. This woman had a high blood pressure, probably due to arteriosclerosis. She had a systolic murmur which may be due to heart lesion or the blood condition following the hemorrhages.

Group III will attempt to show that the evidence points to trouble in the liver, and that blood disease or disease of the spleen, while either may exist, is not of primary importance. The principal diagnosis will be cirrhosis of the liver with varix in the lower esophagus or upper end of stomach.

DR. ALLEN'S discussion, summarized, is as follows: The principal symptom is many and repeated hemorrhages. Outside of a little enlargement of the liver and spleen, that is the only diagnostic point. The blood conditions causing hemorrhage are better understood by reviewing certain points about the blood. The granular leucocytes and red cells are formed in the bone marrow; the lymphocytes come from the lymph glands; during the evolution of these cells, we have as antecedents of the red cells the erythroblasts, which are large nucleated forms, probably two or three times the size of the red cells; as evolution proceeds, this nucleus becomes shrunken and paler and the cell smaller, being called normoblasts at this stage. Later on the nucleus is extruded from the cell and we have the mature red cell. In the evolution of the granular leucocyte, we have the same process; originating from the bone marrow cells, we have, first, the myeloblasts, then the myelocytes, then the mature cells, eosinophiles, basophiles, or neutrophiles.

In blood diseases, owing to the stimulation of the marrow, and the migration of these cells into the blood stream, abnormalities in form, shape, staining, etc., occur. Anemia due to blood destruction is followed by marrow stimulation as the essential feature, and this occurs in the majority of blood diseases; exceptions are chlorosis and myelopathic anemia, or growths in the bone marrow substance which limit cell production. Another type of anemia which is essentially one of depressed blood formation, is the so-called aplastic anemia. In none of these three do you get marked bleeding.

We may divide the blood diseases into (1) those due to diminished blood production; (2) blood destruction and (3) acute and chronic blood losses. Frequently, in diseases like pernicious anemia, there is a stimulation of the blood producing cells and then the prognosis, or progress of the case depends on the balance between blood production and blood destruction. The most important of the anemias characterized by blood destruction is pernicious anemia, in which you have a variety of pictures, but there are one or two characteristics; you always have a plus color index, and you have many immature forms, characterized by changes in size, shape, etc.; you do not have such a picture in this case.

In acute blood loss, after the first few hours, you have a marked leukocytosis which may run from 20,000 to 40,000, with a minus color index, which we have in this case; however, the leukopenia in this case would rule out anemia due to acute blood loss. In chronic blood loss, when the bleeding is continued over a long period, we have the picture presented by this patient. In such long continued loss, as we have here, there is a depressed function of the bone marrow; with this depressed function, changes in the blood picture different from acute blood loss occur; there is a leukopenia instead of leukocytosis and the blood platelets are diminished. In reviewing the findings, there is nothing that

would not conform to chronic blood loss, and we believe the blood picture is due to that.

There is one other condition which we have not discussed, and that is Banti's disease or splenic anemia. The characteristics of this are marked increase in size of the spleen, a chloretic type of blood, with a minus index, and leukopenia. Therefore, we cannot rule out Banti's disease on the blood picture. This condition occurs in early adult life and the splenic enlargement is always noticeable. In this case the spleen, after being enlarged, has retrogressed in size and at the last examination there was no enlargement. So, Banti's disease is questionable, although frequently in that disease there is cirrhosis of the liver, and it may be that this is Banti's disease which has progressed to the stage of liver and splenic cirrhosis.

DR. FLINN'S discussion may be summarized as follows: This case is unique in one respect, as compared with any other case of our series for several years; the visiting and consulting staffs of the Massachusetts General Hospital, after studying it over for nine months, were apparently not able to make a definite diagnosis. In the light of this fact, Group III considers that it has considerable terminology in even suggesting a probable diagnosis. Another marked feature is that up until the time of the first hemorrhage, there was practically not a single symptom, and even after profuse bleeding for nine months, there are still very few symptoms.

In a general way, the case is remarkable in being practically symptomless; there are a few definite signs but no symptoms. It seems that the chief question becomes, "What disease or combination of diseases will produce these signs without symptoms whatever."

As pointed out, the chief presenting sign is profuse bleeding which we believe to be hematemesis, either from the lower end of the esophagus or the cardiac end of the stomach. In a hemorrhage of this size, quite a large vessel must have broken either an artery or vein. If this were an artery, the breaking of the vessel would probably be due to ulceration; if a vein, it is probably a varicosity. The chief cause of ulceration in this region would be gastric ulcer or malignancy, both of which we believe are ruled out by the absence of symptoms. The two chief causes of varicosity are obstruction in the portal circulation and some form of anemia. The last speaker went fully into the question of anemia and gave the conclusions of Group III.

We believe the question narrows down to, "What disease or group of diseases will cause portal obstruction and give practically no symptoms?" To understand the possible pathology, we must review the anatomy of the portal system. The portal vein carries the blood of the digestive system to the liver, and is formed by the union of four large veins; (1) gastric from the stomach; (2) splenic from the spleen; (3) superior mesenteric, carrying blood from the small intestines, cecum, ascending and transverse portions of colon; (4) inferior mesenteric, from the descending colon, sigmoid and rectum. If we have obstruction in the portal system, we have a passive congestion all along the gastro-intestinal tract. There are two principal causes of portal congestion; (1) cirrhosis of the liver, and (2) thrombosis of the portal or splenic veins. In addition to the portal system, we also have a system of venous anastomosis, a compensatory circulation which is composed of very small veins but which, under portal back pressure, may become dilated and carry off the blood from the portal circulation. This compensatory system consists of anastomoses from the portal system through the left coronary vein of the stomach to the esophageal vein and from the esophageal vein to the azygos, intercostals and vena cava. When blood is forced

through these anastomotic veins, what will happen? An intense varicosity will result at the lower end of the esophagus or upper end of the stomach.

The conception of Group III of this case is this: The patient died from hemorrhage from the upper end of stomach or the lower end of the esophagus. This bleeding was due to varicosities of the esophageal vein, caused by back pressure from the portal system through this anastomotic system. Our diagnosis is portal obstruction, due either to cirrhosis of the liver, with or without accompanying splenic anemia, or to thrombosis in the portal system.

DR. JONES read the discussion of Dr. Cabot and the necropsy findings, as follows:

DR. CABOT: When hematemesis comes with no previous symptoms, as we say "out of a clear sky," cirrhosis of the liver is the commonest cause. Probably this will not be cirrhosis of the liver, but that is the right thing to think of as the commonest cause.

Two quarts of blood is a great deal, if it is so. It is very easy to get mixed up with stomach contents, etc.

We know from the war that people have lived after bringing up two quarts of blood. It is really striking how little these hemorrhages pulled her down. We could not have a case more illustrative of whatever turns out to be the cause of hematemesis in a person of perfectly good health, without any previous symptoms. Suppose one came to the bedside of a person who had just vomited two quarts of blood. Suppose one took the hemoglobin and found it normal. How soon should he expect it so go down? It takes forty-eight hours to get the blood diluted with the tissue fluids so that the patient is anemic. We saw that very often in the war. People lost a lot of blood, and yet the hemoglobin was perfectly normal.

Distant bronchial breathing on the left is much more significant than if it was on the right. Accuracy of thoracic percussion is always impossible, perhaps a little more here than usual.

Of course, if we are thinking of cirrhosis, as we are, and if this abdominal mass is spleen, that supports the diagnosis, because the spleen is usually enlarged in cirrhosis of the liver.

The fundus of the eye shows what we should expect with high tension at her age.

This is one of the cases of apparently fixed gravity of the urine, at a high point, which has no significance in my opinion. We are not told whether these were catheter specimens, so we shall disregard these statements as to the sediments. There was no albumin and no sugar, and I suppose nothing important in the sediment.

The leukocytes count is below normal, and that is characteristic of one disease which shows an enlarged spleen and sometimes other symptoms like these. Splenic anemia is what I had in mind,—or Banti's disease, which is indistinguishable from cirrhosis in many cases. There is no evidence of active regeneration on the part of the marrow, which is what stripping and polychromatophilia show. Cresyl blue is the stain we use for reticulated cells. That is normal here.

Let us sum up what we have so far. We have a woman who comes in for vomiting blood. We find a big liver and a big spleen, and I presume no ascites demonstrable. We have a high blood pressure, we have a big heart, we have a normal urine, we have an apparently secondary anemia of considerable severity. We have no evidence in the blood of any attempt at regeneration, I do not know why not. X-ray shows nothing of importance. We have ruled out so far as we can any organic disease like cancer or ulcer of the stomach.

What diagnosis did they make at the time of her stay in the hospital? I think they made a diagnosis

of Banti's disease or splenic anemia, because of the condition in the blood and the way the disease started. It is never a very satisfactory diagnosis. We are never sure that it is not cirrhosis of the liver.

The word "hypertrophic" is not one that is used now in speaking of cirrhosis. Alcoholic cirrhosis of the liver may give a big liver, a normal sized liver, or a small one. Biliary cirrhosis, the so-called Hanot's disease, may give a large liver or one of normal size. So that the term "hypertrophic" has no significance. In most cases of cirrhosis that I have seen the liver has been big. There is overgrowth and fat and regenerative tissue, so that the whole organ is big.

The best diagnosis I can make is cirrhosis of the liver or Banti's disease, leaning toward the latter. I do not make any distinction between Banti's disease, and splenic anemia.

Blood pressure measurements in the out-patient department showed quite a big pulse pressure.

At the time of the thunderstorm probably most of the blood went down instead of coming up.

She came back to the hospital after her third hemorrhage.

NOTES ON THE SECOND PHYSICAL EXAMINATION

Nothing more is said about the left apex, which was queer before. It just blew away I suppose.

It is not likely that her heart got smaller. Hearts do not do that. Either the first percussion was wrong or the second was wrong or they were both wrong, as most percussion is.

It is pretty hard to tell about fluid sometimes in a thick-walled abdomen.

The anemia is a good deal worse than before, even though she brought up only a little blood. A lot must have gone the other way. One stippled cell per high power field is a good many. Five per cent reticulated cells is great increase over the normal.

The Rosenthal test is for liver function.

We have a bad slang phrase here, "blood condition." It means "blood disease," and we ought to say so.

The internist had good nerve to assert that cancer of the stomach is present when the x-ray is negative, but that has happened. Most malignancy which x-ray misses is on the posterior wall.

They wanted to see if they could see any varicose veins at the root of the esophagus. But the wise laryngologist knew the esophagoscopy has itself some risks. So the satisfaction of intellectual curiosity which we sometimes push too far was foiled here, I am glad to say.

I do not think it is gastric disease, either ulcer or cancer. I am still in doubt between the two I spoke of in the beginning. As she is a woman and probably did not have an alcoholic history I would rather assume Banti's disease than anything else. But I think the chances are it is something none of us has thought of at all.

This is a seven-foot x-ray plate, taken to show the actual size of the heart. The tortuous aorta means nothing. It used to be mistaken for aneurysm of the aorta in the early days of x-ray work. I should think the transverse diameter of the heart was big. As we have a high blood pressure I think there will be hypertension, having so far as I know no particular relation to the patient's death.

Miss Painter: The chest was twenty-seven and the total diameter of the heart was 14.2.

Dr. Cabot: 14.2 is more than half of 27. Therefore the heart is big. That is the rule here.

I do not see anything wrong with this x-ray of the lungs. The diaphragm and the bubble underneath are normal.

CLINICAL DIAGNOSIS (FROM HOSPITAL RECORD)

Cirrhosis of the liver.

Esophageal varices.

Hypertension.

Transfusions.

DR. RICHARD C. CABOT'S DIAGNOSIS

Banti's disease, or

Cirrhosis of the liver.

Esophageal or gastric varices.

Hypertension.

Hypertrophy and dilation of the heart.

ANATOMICAL DIAGNOSIS

1. *Primary fatal lesions*

Cirrhosis of the liver.

2. *Secondary or terminal lesions.*

Varices of esophagus and stomach.

Anemia.

Hemorrhage into gastro-intestinal tract.

Edema of the lungs.

3. *Historical landmarks*

Arteriosclerosis.

Hypertrophy and dilatation of the heart.

Slight chronic pleuritis, right.

Chronic salpingitis.

DR. RICHARDSON: The skin and mucous membranes were very pale. There was no evidence of icterus. In the right cubital space was a short sutured wound. There was a large amount of subcutaneous fat. The peritoneal cavity was negative; no ascites. The appendix was negative except that the tip was bound down by old adhesions on the right side of the peritoneal cavity in the region of the tube and ovary; that is, there was more chronic salpingitis with the appendix tip bound down by the adhesions.

Along the lower two-thirds of the esophagus there were irregular rows of varices, and the tube contained much thin pale blood. The stomach also contained much thin blood and old blood-clot-like material, and there were some varices in the stomach, but not so marked as in the esophagus. The intestines showed rather thick, somewhat elastic walls, the vessels injected, but were otherwise negative. In the large intestine the fecal material was blackish red, apparently mixed with blood.

The liver was two centimeters above the costal border. The diaphragm on the right was at fourth rib, on the left at the fifth rib. That locates the liver, which weighed 1459 grams, if anything rather small for her.

There were a few pleural adhesions on the right apex. The lungs were pale, spongy, and showed much edema.

The heart weight 490 grams. That is considerably enlarged for her. The valves and the myocardium were negative. The coronaries showed a moderate amount of sclerosis, but were free and fairly capacious. The ascending thoracic aorta showed a very slight amount of fibrous sclerosis, but the rest of the aorta showed much fibrous and fibrocalcareous sclerosis, and in places areas of atheroma. The great branches of the aorta showed a slight amount of fibrous sclerosis. So that we have a hypertrophied and dilated heart and the amount of arteriosclerosis mentioned. There was but little blood in the heart cavities.

The liver weighed 1459 grams and showed frank cirrhosis. The peritoneum in the region of the liver showed a vascular meshwork.

The spleen weighed 600 grams, considerably enlarged, with smooth surface and elastic brown-red tissue.

The kidneys weighed 270 grams, the markings and tissue generally negative, except that they were very pale.

The uterus and adnexa were negative except for the chronic salpingitis mentioned.

Dr. Cabot: Suppose a cantankerous person wanted to maintain against you that that was Banti's disease, how would you differentiate it?

Dr. Richardson: The amount of cirrhosis with so-called Banti's disease, as far as we have seen it

here, is comparatively small in extent, with no such accompanying picture of cirrhosis, bleeding and varices.

Dr. Cabot: Many of the descriptions of Banti's disease speak of varices, the hemorrhages and the whole picture that we see here. I do not see how the distinction can be made between cirrhosis of the liver and Banti's disease.

Dr. Richardson: In the cases called Banti's disease here the outstanding things have been the enlarged spleen and anemia. The spleen in this case weighed 600 grams, and there was some increase in interstitial tissue. There was marked cirrhosis of the liver, and a spleen of that nature might go with it.

Dr. Cabot: The ordinary conception of Banti's disease is a trouble which starts with enlargement of the spleen. If that is removed it can be cured. If it is not removed there is progressive cirrhosis of the liver. It is a question how long the patient can live without hemorrhage cutting short life. But cirrhosis of the liver always has a big spleen too, and how big it shall be with straight cirrhosis and how small with Banti's disease there is no way of saying. We never shall get anywhere in this point of differential diagnosis on the basis of big spleen and ascites, because we have no conception of the cause of either disease, except I believe that alcohol has a good deal to do with cirrhosis.

A Physician: In cases of cirrhosis are hemorrhages not so liable to occur in the hypertrophic stage as in the atrophic stage?

Dr. Cabot: That is not my impression. It may be true. Your question implies the familiar idea that the cirrhotic liver starts big and gradually gets smaller, that the early stage is an enlarged liver and the later stage a small one. I do not believe there is any good evidence for that. Nobody has ever watched the liver get smaller. We find big livers at the end; we find small livers at the end; and I do not know that the liver goes through the stages of big, normal, small. Neither do I know of any particular relation of hemorrhage to the big livers and small livers.

Physician: Anatomically how do you differentiate Banti's disease from Gaucher's disease?

Dr. Richardson: They probably belong to the same group. In Gaucher's cases there is a very large spleen and the sections show hyperplasia of the endothelial cells of the blood sinuses and to such an extent that some regard it as a tumor. But these changes in the spleen of interstitial increase and hyperplasia of the follicles and of endothelial cells occur in varying extents in all of the spleen group.

A Physician: To what extent does the presence of ascites differentiate between the two conditions?

Dr. Richardson: I thought at one time that I had a method which would differentiate between the kinds of cirrhosis,—that one had ascites and the other had icterus. Unfortunately there are cases that have both, and I gave it up.

BOOK REVIEWS

Infection, Immunity and Inflammation.—A study of the Phenomena of Hypersensitiveness and Tolerance and Their Relationship to the Clinical Prophylaxis and Treatment of Disease, by Fraser B. Gurd, B. A., M. D., C. M., F. A. C. S., Montreal, Lecturer in Applied Immunology and Surgery, McGill University; Associate Surgeon, Montreal General Hospital; Consultant in Surgery and Surgeon in Charge, St. Anne's Hospital, Department of Soldiers' Civil Reestablishment; The C. V. Mosby Co., St. Louis; 1924.

Dr. Gurd writes simply and plainly. He takes a subject that has an endless number of apparently conflicting facts and observations, and offers a few

theories, and most of the facts and observations fall into line; those that do not, seem relatively unimportant. This statement is probably like his theories—only relatively true.

He explains allergy, anaphylaxis and tolerance, and connects them all up with immunity in what appears to be a perfectly sensible way. Perhaps I can present a brief resume of his idea:

When foreign protein is injected for the first time into the tissues of an animal there comes about, slowly and gradually, illness in the animal. Nothing happens perhaps for hours or even days. Gradually the body is caused to form an antibody or a ferment which causes partial disintegration of the protein; at this stage it reaches somewhere near that of peptone; the protein then is toxic to the body. If sufficient protein was given the first time or, better yet, several moderate doses were given at short intervals, the body produces a considerable quantity of the antibody described above and called by Gurd "antibody of the first order." This antibody seems also to be the opsonin of Wright and not only stimulates leucocytes to ingest bacteria but actually to induce leucocytosis.

When a second injection of the protein is given after about two weeks, a marked local reaction may take place. This is the allergy of Von Pirquet, observed first in connection with tuberculosis. Allergy comes from two words and means altered reaction.

When the second injection of protein is given, the antibody present produces rapid disintegration of the proteins to about the peptone stage and, in case of allergy sufficient of them remain localized to cause inflammation. But if the toxic protein is absorbed rapidly, a more or less general toxic effect is produced. This is known as anaphylaxis. The state of the individual subject to either allergy or anaphylaxis is hypersensitiveness.

An individual hypersensitive to bacterial protein is immune to bacterial invasion, because his tissues destroy the protein of the bacteria. Such is the result of prophylactic bacterial vaccines.

The antibodies of the first order, it seems, may become saturated with the protein, and hence the individual is temporarily desensitized. This part of the theory is held by other writers.

The protein molecule which is left after being worked upon by the antibodies of the first order, stimulates the body to produce another antibody to produce further degradation of the protein molecule. These antibodies are designated "of the second order." They are best produced by repeated small injections of the whole protein. When those of the second order are produced in sufficient quantity, the protein is completely destroyed by being attacked first by the antibodies of the first order, and in rapid turn by those of the second order.

The agglutinin and lysins, as well as the opsonins, seem to be the antibodies of the first order, or to be closely associated with them. When the antibodies of the second order exist in quantity sufficient to destroy the peptone stage of the protein as rapidly as produced by the antibodies of the first order, the person is said to be in a state of tolerance, or is tolerant.

Antibodies are active only in the presence of complement. This brings in another factor of variability.

Antibodies seem to be the property of tissue cells and yet an animal may be made passively anaphylactic by transference of blood from a hypersensitive animal to a normal animal. Another strange fact is that, some hours after transference of the blood, the animal is more highly anaphylactic than at the moment of transference.

There are a number of facts not explained by Gurd's theories. He discusses not only allergy, anaphylaxis, tolerance, etc., but also all phases of im-

munity and inflammation. He believes much in vaccine therapy but he cautions against bacterial vaccine in the presence of acute infection.

Any physician can spend a few profitable evenings with this work.

Recovery Record—For Use in Tuberculosis. By Gerald B. Webb, M. D., Consulting Physician, Cragmor, Glockner, and Sunny Rest Sanatoria; Late Lieut. Col. M. P., U.S.A., Senior Consultant A.E.F.; Former President National Tuberculosis Association; President Colorado School of Tuberculosis, Colorado Springs, Col.; and Charles F. Ryder, M. D., Cragmor and Glockner Sanatoria; Colorado School of Tuberculosis, Colorado Springs, Col.; second edition, revised; Paul B. Hoeber, Inc., New York; 1925.

This is not a large book as to size; its purpose, conception, and execution are colossal, and beautiful. The 79 pages of advice to the patient, preceding the blanks for the recovery record, constitute a wonderful appeal to the patient to put forth his every effort to recover his health. The language is used most artistically and effectually. We quote selected sentences: "Recovery from Tuberculosis is an adventure, with life itself as the goal of success." "Perhaps it is stupid and even insulting for the well to tell the sick, or the happy to tell the unhappy, to be cheerful."

One physician told his patient: "You have not more than one chance in five of recovering." The other said: "You have a good chance to get well, at least one chance in five!" Are not these two sentences worth any physician's time to read?

The book is worth the price for entertainment alone. The value for those who need it cannot be paid in cash. All tuberculosis patients should have copies. Physicians, recommend it to your patients with tuberculosis, and do both your patients and yourself a good turn.

Old and New Viewpoints in Psychology. — By Knight Dunlap, Professor of Experimental Psychology in the Johns Hopkins University; The C. V. Mosby Co., St. Louis; 1925; \$1.50.

This volume of 166 pages presents five lectures entitled: Mental Measurements; Present Day Schools of Psychology; Psychological Factors in Spiritualism; The Psychology of the Comic; and the Reading Character from External Signs.

The reviewer lays no claim to special erudition along the lines of psychology. To psychologists he is a more layman. A layman's criticism must be taken only for what it is worth. With that apology I may make a perfectly worthless statement; Psychologists take themselves to d— seriously. Professor Knight is a mild offender only; I read every word of his book. I enjoyed it. I may even read it again. I learned from it and I read it again I shall certainly pick up points I overlooked.

The last sentence of the book reads: "In the meantime, in the interests of the gullible public as well as the interests of psychology, both pure and applied, we must carry on an educational campaign against character analysis."

Psychologists re always studying reactions. Professor Knight will be interested mildly in the reviewer's reaction to his book and to know that he recommends it to all who are in any way interested in the study of psychology.

Surgical Clinics of North America, for the year 1925, issued serially, one number every other month. Volume V, Numbers 1 to 6. Total pages 1704 with an average of about 125 illustrations in each number. Per clinic year, Paper \$12.00; Cloth \$16.00 met. Philadelphia and London; W. B. Saunders Company.

Chief interest in the Clinics for 1925 lies in the

Philadelphia number which covers the meetings of the American College of Surgeons, and the Mayo clinic number. The others contain the usual run of good or average cases with here and there a mention of new technic, good procedure or lucid analysis. While we all desire to keep posted on rare and unusual cases, these can hardly be said to hold practical interest compared with the conditions that we meet and upon which we must pass judgment daily.

The college number with a symposium on gall bladder, Frazier on neurological surgery and Deaver on almost everything, holds first choice. Little incidentals such as, "Morphin never relieves the paroxysms of major trigeminal neuralgia; "Chronic appendicitis is a clinical entity and a surgical fact and not a fancy," and description of the on-coming blindness of pituitary disorders, thrown in with the consideration of some major condition revives the memory or recalls some forgotten case. Mayo, Judd and Balfour, with others not so well known, furnish a number that may be somewhat technical from a scientific standpoint but is certainly more interesting than much of the Mayo annual clinic volume.

E. B. R.

The Surgical Treatment of Goiter by Willard Bartlett, A. B., A. M., M. D., D. Sc., F. A. C. S., St. Louis; with foreword by Dr. Charles H. Mayo, Rochester, Minn.; with 130 original illustrations; The C. V. Mosby Co., St. Louis; 1926; \$8.50.

There are books and books just as there are doctors and doctors. There are those of each who inspire confidence, and those who fail, to a greater or less degree, to inspire confidence.

Bartlett (with the publisher) has produced a book on the surgical treatment of goiter which impresses the reader that it is authoritative, that it is complete to the moment of leaving the author's hands and that it is most practical and usable.

The author's chapter on historical data is short, perhaps too short, but highly interesting. The reviewer at any rate could have read with pleasure many more pages of Dr. Bartlett's beautifully presented historical material. The chapter on Pathology is written by Louis B. Wilson of Rochester, Minn.; that on the Heart is by Samuel B. Grant of St. Louis; that on Laryngeal Complications is by French K. Hansel. All three chapters are highly creditable.

Bartlett's chapters include a discussion of unusual manifestations of goiter, indications for surgical treatment, preparation of the patient, types of operations, anesthesia and anesthetics, detail of operating, complications, after treatment, recurrences, etc.; these are just the subjects on which the surgeon wishes to get the words of the master. The reading of the chapters on technic would show the reviewer that the author is a master technician were he not already apprised of that fact.

Mr. Wm. French, who illustrated the book, deserves special mention. His illustrations are not just beautiful; they illustrate. Each illustration seems to have had study so that no more than necessary to convey the thought is pictured. There are 330 illustrations.

Bartlett could have written the book from his own experiences—so broad an experience has he had—and it would have been an excellent work. His familiarity with the accomplishments of other workers in the field, his knowledge of the literature and particularly his delightful use of language—make the book a valuable contribution. Surgeons will generally wish it on their shelves. We recommend it to them.

General Bacteriology, 8th Edition. Edwin O. Jordan, Ph. D.

This book needs no introduction to the bacteriologist or technician. It is very extensive and thorough. It takes in the usual procedure pertaining to staining methods, preparation of, and titration of, culture media by the newer Ph method and the old titration method, and all things pertaining to bacteriology.

The section on Pathogenic Organisms, their cultural characteristics, morphology, mode of dissemination and the epidemiology is especially good.

This book can be well recommended to the beginner as well as to the experienced worker.

EL PASO PERSONALS

DR. JAMES VANCE spent the holiday season in Mexico City, where he took part in the first amateur open golf championship of Mexico. Dr. Vance was runner-up in this tournament, losing the championship, to Claude Butlin, 3 to 2 in the final 36 hole match.

The wife of DR. J. N. STRATTON of Safford, Arizona, was operated upon in El Paso, December 12th. She is convalescing rapidly at this time.

DR. F. T. HOAGLAND, of Cananea, was in El Paso the latter part of January, en route to Mexico City.

DR. M. G. PADEN, of Carrizozo, was a professional visitor to El Paso, January 18th.

DR. R. E. McBRIDE, of Las Cruces, was a professional visitor in El Paso January 20th.

DR. F. O. BARRETT is doing post graduate study at Tulane University in New Orleans. He is limiting his study to pediatrics.

DR. AND MRS. JOE HILTON, of Mexico, were holiday visitors in El Paso.

DR. L. L. WITHERSPOON, who has been quite ill at William Beaumont General Hospital, is convalescent at this time.

DR. J. HAL GAMBRELL, who has been ill at the Masonic Hospital, is recovering rapidly at this time.

DR. FELIX P. MILLER returned January 28th from Tulsa, Okla., where he opened the discussion of a paper at the Sectional Meeting of the American College of Surgeons. The Section will meet in Little Rock, Ark., next year. Texas, because of its size, has asked for a separate meeting of its own, which Dr. Martin promised to arrange for next year.

DR. E. O. EARNHEART, gynecologist of Oklahoma City, is spending the winter in El Paso. He made a very interesting talk for the El Paso County Medical Society, January 31st. He spoke very highly of the climate of the southwest, stating that, if anything, it was underestimated by southwestern men as a resort.

DR. VICTOR E. BONELLI, of Fort Worth and Los Angeles, was a visitor at the County Society January 17th. He urged a Medical Arts building for El Paso, and cited Fort Worth's as an example of one that is a success in every way. He spoke highly of El Paso's climate as a rival of California's.

DRS. RILEY M. WALLER and R. B. McKNIGHT of Rochester Minn., have opened offices in the Two Republics building and will limit their work to surgery and surgical diagnosis under the firm name of Drs. Waller and McKnight. Both took their fellowship at Mayo Clinic. They are welcome additions to the El Paso profession.

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ARIZONA STATE MEDICAL ASSOCIATION, YUMA, APRIL 21 TO 23.

The General Program Committee, Dr. Charles S. Vivian, of Phoenix, Chairman, wishes to issue the positive declaration that the scientific program for this year's meeting will be closed thirty days in advance of the meeting, and will be published in the March issue of SOUTHWESTERN MEDICINE, which will be in the mails before March 25th.

Members of the profession in Arizona who have been in the habit of delaying the forwarding of titles of papers until the last moment will very likely find themselves without a place on the program. It is the desire of the Committee to use all the papers from Arizona which are available, but the titles and abstracts of papers must be sent in immediately, if they are to appear on the program.

Those who are planning to attend should, also, heed the advice issued last month and secure hotel reservations immediately. The Hotel del Ming will be the headquarters. This is a very excellent hostelry but is small and its capacity is very likely to be taxed to the uttermost by this convention.

NEW MEXICO MEDICAL SOCIETY

The annual session for 1927 will be held at Carlsbad on the 9th, 10th and 11th of May. Letters have been mailed to the secretaries of the various county societies of the state asking that they furnish papers for the scientific section of the program. It is to be hoped that not one of the county societies will fall down on this request and that we may have a fair representation of all the societies on the program.

In the January issue of SOUTHWEST-

ERN MEDICINE request was made that members should, at once, get in touch with the secretaries of their societies and settle their annual dues and that members at large, affiliating only with the state society, should forward their checks direct to me.

By heeding that notice, as well as this one, much trouble and expense to the society will be averted and the chances of being dropped from membership on account of NON PAYMENT OF DUES much lessened. Some members, immediately upon reading the notice in the January issue, mailed checks for the annual dues of five dollars. Others have neglected this important duty.

Please do not delay longer, but right now, while fresh in mind, PAY YOUR DUES.

C. M. YATER, Sec'y.

Roswell, New Mex.

TEXAS STATE MEDICAL ASSOCIATION MEETS IN EL PASO

El Paso is busy preparing for the Convention of the Texas State Medical Association, which is to meet here April 26, 27 and 28. The formal program promises to be unusually good. There is an attractive list of distinguished guests.

The local men are preparing clinics and pathological exhibits of both fresh and preserved specimens that will prove unusual for a state meeting.

Entertainment, both domestic and foreign, is being planned by local committees and the work is sufficiently under way that it is safe to prophesy that this will be El Paso's premier accomplishment in the way of medical reception.

El Paso is hopeful of attracting a large

number of visitors from New Mexico, Arizona and Mexico, that her "close friends" may mingle with her "down state acquaintances."

Hotel reservations can be made at this time by communicating with Chairman of the Hotels Committee, Dr. Orville Egbert.

In connection with the meeting, the County Society is putting on a handicap golf tournament open to the profession of Texas, New Mexico, Arizona and Mexico, players attested by their local club authorities. Medal play will prevail, cards for 36 holes being turned in before noon of the last day of the session. The full 36 holes may be played in two days, or one day of play, cards to be turned in to the El Paso Country Club manager, properly signed and attested. Silver cups will be awarded the winner, two runners up, besides a number of minor prizes, such as clubs, balls, etc., therefore, all players should turn in their cards. Your badge will admit you to the course. Caddy fees are seventy cents for eighteen holes.

Cars will leave the Paso Del Norte at 5 a. m., 6 a. m. and 7 a. m. daily, or you may go out in a taxi at your convenience. The course is eight miles up the Valley Turnpike. The following members of the Golf Committee will take pleasure in seeing that you visit the links: B. F. Stevens, Chairman; Ralph Homan, J. A. Picket, E. D. Strong, James Vance, F. D. Garrett, George Bruner, C. P. Brown.

Dr. W. W. Waite is Chairman of the Scientific Exhibits for the State Medical Association and desires to invite our friends of the Southwest to prepare any exhibits, or demonstration they may have available.

WERE WE GYPPED?

In connection with the Basic Science Bill, recently before the Arizona Legislature, many members of the Senate had given the friends of this legislation reason to believe that they (the senators) were ready to vote for it. For that reason, it was re-introduced after being indefinitely postponed.

We had reason to believe that at least three members of the Public Health Committee of the Senate (Senators Lyons, Wills and Wylie) were prepared to report favorably on this bill. When it was reported unfavorably by this Committee, Senator Lyons excused himself to his constituency in Gila County by the statement that he was the only member of the Committee who was willing to report favorably. Physicians of Pinal and Cochise County who were so positive that Senators Wills and

Wylie were in favor of this bill are asked to take notice of this statement by Senator Lyons.

As the matter now stands, there seems to be only one clear-headed champion of public health in the Senate, and that is Senator Bettwy of Santa Cruz County. This bill is clearly a public health matter, intended to protect the public from exploitation by unqualified practitioners of healing arts. The medical profession of the state, who undertook to introduce this legislation and explain its purpose, have either failed to get the message across, or else the legislative ears have been tuned to a different and less worthy wave length.

MARICOPA COUNTY (Ariz.) MEDICAL SOCIETY MEETINGS.

(Nov. 13, 1926)

Held at the Deaconess Hospital, Dr. J. E. Drane, president, in chair.

Dr. Schwarz gave a report of the Committee on Children's Week, explaining the different features of the clinic for the examination of children, and the plans of the clinic were discussed in detail. The age limit was fixed at six years.

Dr. Drane gave a report of the Committee on Sanatorium Situation.

The name of Dr. J. A. Ollerton, of Mesa, was reported favorably by the Board of Censors, and he was unanimously elected to membership.

Dr. George W. Stephens, of the State Hospital, gave a paper on "General Paralysis of the Insane," reporting his experience in the treatment of these cases, mentioning particularly the newer work with malarial infection. The subject was discussed by Drs. Clohessy, Sult, Hicks and Stroud.

Mrs. Marie Phelan, of the Federal Childs' Welfare Bureau, Washington, D. C., gave an interesting talk on the early milk feeding of infants as instituted by the public health departments of various cities throughout the United States since 1906.

(Nov. 27, 1926)

Held at St. Joseph's Hospital, Dr. Drane, president, in chair.

Dr. T. E. Schwarz, chairman of the Children's Clinic Week, held under the auspices of the Society, on November 18th, 19th and 20th, at the Chamber of Commerce in Phoenix, gave a report of the clinic. It was carried unanimously that a vote of thanks be extended to Mrs. Charles R. Howe, of the State Board of Health, to the Chamber of Commerce, the State Nurses' Association, the Maricopa County Dental Society, the Central Arizona Light & Power Company, the Deaconess Hospital, St. Joseph's Hospital, and other organizations which assisted in carrying on the clinic.

It was voted that the meeting night of the Society be changed from the first and third Saturday to the first and third Monday of each month.

It was voted that the second Monday evening of December be made ladies' night and the Ladies Auxiliary be invited to join with the Society in the annual meeting.

Dr. Sweek brought up the fact that the American Medical Association has gone on record as opposing the Sheppard-Towner bill; he also stated that some thought should be given to the matter of a new medical practice act before the coming legislature. It was voted that a program be ar-

ranged to discuss these matters and that Dr. Fahlen be asked to present the matter of the Sheppard-Towner bill.

Dr. Victor Randolph presented a paper on "Treatment of Pulmonary Hemorrhage," which was discussed by Drs. Phillips and Bannister.

Dr. Charles S. Vivian read a paper on "Concerning Urological Diagnosis," which was discussed by Dr. Sweek.

Both of these papers have been read before the Medical & Surgical Association of the Southwest, and will appear in SOUTHWESTERN MEDICINE in due course.

(Dec. 6, 1926)

Held at the Deaconess Hospital, Dr. Randolph presiding in the president's absence. Dr. Ollerton acted as secretary.

Dr. F. T. Fahlen, Superintendent of Public Health for Arizona, presented the matter of the Sheppard-Towner Act, its purposes and its administration in Arizona under his supervision. He considers that it has done a valuable work in Arizona and favors its continuation. During the past two years the work has been curtailed because the Arizona legislature failed to make the appropriation to match the Federal Aid. Many questions were asked and some criticisms were brought forth, all of which were answered by Dr. Fahlen.

Dr. W. W. Watkins presented a carefully prepared summary on the "Deficiencies of the Arizona Medical Practice Act," with discussions by Drs. Garrison and Sweek.

It was voted that the Society take steps to secure a meeting of the House of Delegates of the Arizona State Medical Association, as soon as possible, to consider drafting an entirely new medical practice act to be brought before the January meeting of the legislature.

(December 20, 1926)

The annual meeting, with dinner for the members and the Ladies' Auxiliary was held at the Arizona Club, with about eighty present.

Dean Lane, of Trinity Cathedral, gave an after dinner address on "Spiritual Health in Relation to Physical Health."

Following the dinner, the ladies adjourned for entertainment at bridge, while the Society conducted its annual business session.

Dr. O. H. Brown, of the Committee on Radio Broadcasting, reported that a number of short talks have been prepared and that these have been edited by members of the committee.

Dr. W. W. Watkins, of the Committee on Newspaper Publicity, reported that the matter of using the available space in the Arizona Republican was at an impasse, owing to the requirement by the newspaper that the articles be signed, and the refusal of the Society to sanction this.

Dr. Randolph, of the Committee on Library, reported that space was available in the Carnegie Library for books and periodicals. Several questions were raised relative to the ownership of the books and periodicals if placed in the library and the care they would receive. The committee was asked to investigate further and report later.

The Board of Censors reported favorably on the application of Dr. Harry E. Braun, and he was elected.

Report of the Secretary-Treasurer was read, and its adoption voted.

The election of officers resulted in the following selections:

Dr. J. M. Greer, President.

Dr. W. A. Schwartz, Vice-President.

Dr. Victor Randolph, Secretary-Treasurer.

Dr. H. B. Gudgel, member of Board of Censors to succeed Dr. Fred Holmes, retiring member.

(January 17, 1927)

The first meeting of the year was held at the Deaconess Hospital, with the president, Dr. J. M. Greer, in the chair.

Dr. Greer gave a very lucid address on "The Function of the County Medical Society in Relation to its Members."

Dr. D. F. Harbridge read a paper on "The Relation of the County Medical Society to the State Association and the American Medical Association."

Dr. H. B. Gudgel read a paper on "A Review of American Medical Ethics."

In the discussion, the fact was brought out that the Society had once voted its approval of a consultant assuming charge of a case, on request of the patient, and regardless of his consultation relation with the attending physician. Upon motion, the Society voted to rescind that action. It was further voted that "any physician calling a consultant may exercise his right to ask the consultant to take charge of the case if for any reason, he so wishes."

Dr. R. E. Bradley, of Roswell, N. M., a visitor, was called on by Dr. Greer for a short talk and spoke very interestingly of his experiences with county medical work and medical ethics in New Mexico.

EL PASO COUNTY MEDICAL SOCIETY MEETINGS

January 17th

DR. R. L. RAMEY read a paper titled "Fractures of Elbow and Forearm"—a paper that he had previously read before the Southwestern meeting at Tucson. The paper will be published as part of that program.

In the discussion of the paper DR. E. J. CUMMINS emphasized that forearm fractures were emergencies and should be treated as such; should be set with the aid of x-ray and fluoroscope. He further stated that care must be taken to preserve the ossification centers in children to insure proper growth of bone.

DR. J. W. CATHCART stated that in his years of observation of fractures there is markedly higher percentage of good results in late years, which he attributed to dressing in the flexed position, plating and setting under the fluoroscope.

DR. E. B. ROGERS considers fracture of both bones of the forearm the worst with which the surgeon has to deal, viewed from a point of good results.

In closing, Dr. Ramey reiterated his position that dressing such fractures in the flexed position will give the best results. Even the fractures of condyles, if they are first reduced, then the arm placed in a state of flexion, the fragments will invariably remain properly aligned.

DR. G. WERLEY reported a case of aortic insufficiency in a man seventy years old, in which the Mayo Clinic, two years ago, had reported heart and aorta negative. Dr. Werley doubted syphilis being the etiological factor in all cases of aortic insufficiency and believed this case substantiates his belief, since the possibility of so old a man contracting syphilis in later years is very remote.

DR. E. B. ROGERS reported a case of dislocation of the acromio-clavicular joint, in which he was able to hold it reduced without an open operation until healed.

The Society unanimously endorsed the candi-

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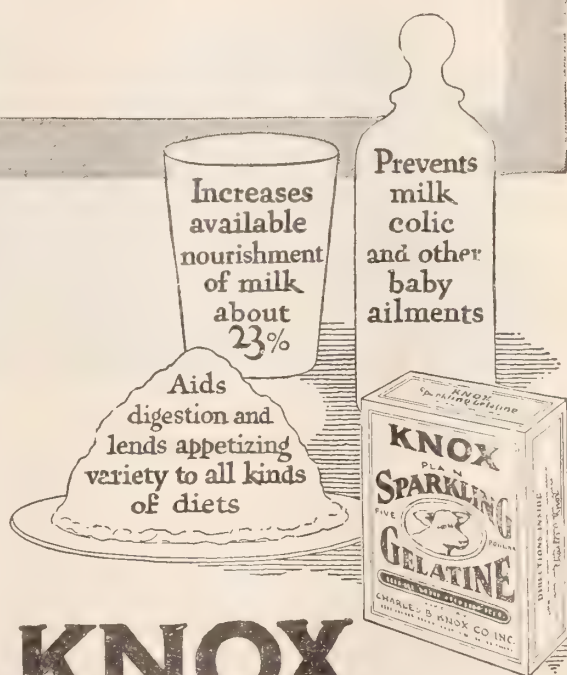
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January 24th

DR. K. D. LYNCH gave a lantern slide demonstration of non-calculus ureteral obstruction; his discussion was extemporaneous. The data compiled, together with the very beautiful illustrations will go to make up a paper which Dr. Lynch will present to the New Mexico Medical Society. It will, therefore, appear in SOUTHWESTERN MEDICINE at a later date.

January 31st

Dr. K. D. Lynch reported a case of Dr. Vance's in which he was associated. The case was apparently that of acute appendicitis, but in a couple of days developed acute suppression of urine, associated with a temperature of 102°. Within a few days the temperature subsided, together with the suppression, and repeated examinations of the urine were negative. The case was dismissed from the hospital. A few days later the patient returned with a pain in the region of the right kidney; the patient was cystoscoped and the urine and roentgenograms were negative. As the acute condition subsided there was a small hard mass palpable at the lower pole of the kidney. This gradually softened and disappeared, the patient apparently making a complete recovery. Diagnosis was acute abscess of the kidney, possibly attributable to a frontal sinus infection.

February 7th

DR. E. A. DUNCAN presented a case of diabetes in a child eight years old, requiring rather large

doses of insulin to handle sufficient carbohydrates. The two points emphasized were that children require proportionately higher caloric food value than adults, and higher protein content in the diet.

In discussion of the case DR. J. A. RAWLINGS emphasized the value of insulin in these children since by its use, the patient can live practically, a normal existence. Prior to the discovery of insulin these cases always terminated fatally.

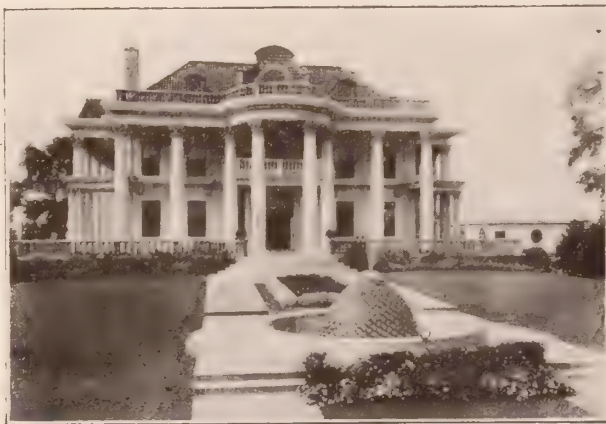
DR. HARRY LEIGH, in speaking of the control of these cases, brought out that in former days when they were managed only by diet, the child would occasionally go on a carbohydrate debauch, often resulting in acidosis, and even coma. Since the use of insulin makes possible a practically normal consumption of sweets, they are much more easily controlled.

In closing, Dr. Duncan emphasized that with insulin management of the diabetic child, it could lead a perfectly normal life.

DRS. W. L. and C. P. BROWN presented a paper on "Hematoma in Fractures" with an illustrating case, which will appear in an early issue of SOUTHWESTERN MEDICINE.

EL PASO CITY-COUNTY HOSPITAL STAFF MEETINGS

At meeting of the Staff of the El Paso City-County Hospital Dec. 15, 1926, the following officers were elected for the coming year:



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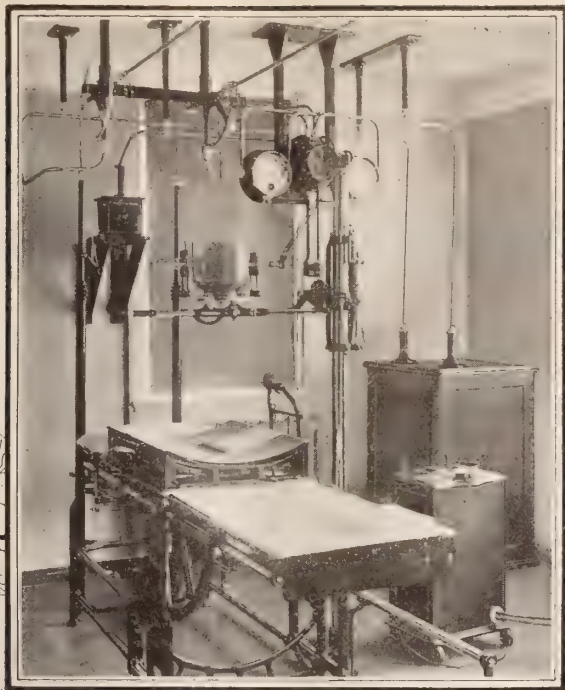
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Chairman of the Staff, Dr. R. J. Cummins;

Vice-Chairman of the Staff and Chairman of the Medical Service, Dr. G. Werley;

Secretary, Dr. L. M. Smith;

Chairman of Efficiency Committee, Dr. E. D. Strong;

To fill place on Efficiency Committee vacated by Dr. Strong, Dr. F. P. Miller.

The Staff of the El Paso City-County Hospital met following dinner at hospital at 7 p. m., January 19, 1927. The meeting was called to order by Dr. E. J. Cummins, chairman of the Staff. Those present were: Drs. McCamant, Miller, Strong, Richmond, May, Jamieson, Gallagher, Varner, Mason, Stevenson, Will Rogers, Long, Cathcart, Neil, Outlaw, Barnes, Werley, Thompson, Armistead, Rigney, Cummins and Smith.

There being a custom that deaths occurring during the month are discussed by the staff members on whose services they occur, the following cases were discussed:

DR. THOMPSON reported a death from gastric carcinoma, and another from fractured cervical vertebrae. The latter was sent to the hospital for a fractured jaw, and the broken neck was discovered at autopsy.

DR. WERLEY reported a death on his service from diabetes, and one from angina pectoris with decompensation and mental symptoms. He emphasized the fact that mental symptoms are common in heart failure, and are not due to the digitalis therapy as sometimes thought. Autopsy of this case showed arteriosclerotic kidneys, aneurism, thrombus of right coronary artery, and obliteration of the left coronary artery.

DR. LONG reported the death of a patient with pulmonary and laryngeal tuberculosis. Pneumothorax was performed. On account of the laryngeal involvement the patient had extreme difficulty in eating.

DR. STEVENSON discussed a death from a bullet wound of the abdomen which penetrated the right lung. Autopsy showed a hemorrhage into the lung.

Dr. Stevenson also reported a death from intestinal and peritoneal tuberculosis with adenocarcinoma of the omentum. The patient had great distention and absolute obstruction. The omentum was extremely brittle. The bowels were studded with miliary tubercles. Enterostomy was performed for relief of symptoms, but the patient died one week after operation. There were two gallons of fluid in the peritoneal cavity.

DR. VARNER reported a premature birth with placenta praevia; also a stillbirth with polycystic kidney.

DR. JAMIESON reported a case with a variety of pathology. The first symptoms had been frequent and painful urination, and pain along the course of the right ureter. Cystoscopic examination showed stricture of the left ureter. The right ureteral orifice could not be found. Operation at this time showed a small right kidney containing pus, an autonephrectomy. Later the patient developed pain in the left side. A gastrointestinal series of roentgenograms showed a spastic colon. The patient was put on a diet and the pain disappeared. She then developed a lump in the left breast the size of a walnut. Dr. Cummins performed a radical breast amputation. Pathological examination of the tumor revealed carcinoma.

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Later she had pains radiating down the right side. Pelvic organs were negative. The patient was admitted to the City-County Hospital Nov. 25th, with a boring pain in the abdomen. Operation showed a cystic ovary and tuberculous peritonitis. Pleurisy followed the operation, and the patient died three days later. Autopsy was not performed.

DR. ARNSON reported three deaths: one skull fracture, one lobar pneumonia, and one chronic endocarditis. These patients died soon after coming to the hospital, and were not seen by members of the visiting staff.

After the business of the staff was transacted the meeting adjourned at 9:45 p. m.

L. M. SMITH, Secretary.

ST. JOSEPH'S HOSPITAL (Phoenix) STAFF MEETING January 10, 1927.

The regular January meeting of the Staff of St. Joseph's Hospital registered the largest attendance of any hospital staff meeting so far held in Phoenix, exactly fifty members being present, with two Sisters from the hospital management.

The program was on Acute Appendicitis, reviewing the work of the past three years in this hospital on this class of cases. The following program was presented, the papers and discussions appearing elsewhere in this issue of SOUTHWESTERN MEDICINE, as a "Symposium on Acute Appendicitis."

"Statistical Report on Two Hundred Cases of Acute Appendicitis Operated in St. Joseph's Hospital During Three Years (1924-26)." W. Warner Watkins, Secretary of Staff.

"History and Etiology of Appendicitis," Dr. J. M. Greer, Mesa; Discussion by Dr. S. D. Little, Phoenix.

"Symptoms and Diagnosis of Acute Appendicitis in Adults," by Dr. H. B. Gudgel, Phoenix; discussion by Dr. O. H. Brown, Phoenix.

"Symptoms and Diagnosis of Acute Appendicitis in Children," by Dr. Dudley Fournier, Phoenix; discussion by Dr. John Wix Thomas, Phoenix.

"Pathology of Acute Appendicitis," Dr. H. P. Mills, Phoenix; discussion by Dr. H. L. Goss, Phoenix.

"Anesthesia in Acute Appendicitis," Dr. S. I. Bloomhardt, Phoenix.

"Treatment of Acute Appendicitis," Dr. E. Payne Palmer, Phoenix; discussion by Dr. A. M. Tuthill, Phoenix.

Following the general discussion, it was announced that the February meeting would be based on the obstetrical work in the hospital during the past two years, and the program would be in charge of Dr. Kimball Bannister, the member of the Executive Committee in charge for February.

W. WARNER WATKINS, Secy.

DEACONESS HOSPITAL (Phoenix) STAFF MEETING

The Medical and Surgical Staff of the Arizona Deaconess Hospital met Monday evening, Jan. 24th, with 27 members and associate members in attendance.

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The Records Committee's report upon the December deaths was made by the secretary:

Case 6874; male, 46 years of age, chronic pulmonary tuberculosis; probably also tuberculosis of the bowels and chronic nephritis.

Case 6896; male, 48 years old. Perforated gastric ulcer; he had a previous perforated gastric ulcer a year before, was operated upon and recovered. He was again operated for this second perforation, which was in a different location. Admitted Nov. 13th, and died on Dec. 11th.

Cases 6914 and 6915; mother and babe, eclampsia and premature birth at eight months.

Case 6946; male 66 years of age, with taboparesis. He was sent to the hospital in a dying condition and lived only a few days.

Case 6954; was a male, 55 years old, with myocarditis. Death came the day after admission.

Case 6979; was a male, 57 years of age, with hemorrhagic nephritis. Admitted Dec. 18th and died Dec. 27th.

Case 6980; a male, 43 years of age, admitted 26th and died the 28th. Diagnosis of acute nephritis, pleurisy with effusion, complicating an acute respiratory tract infection.

Case 2831: By DR. A. A. SHELLEY. Female child, two years old, of perfect physique, well nourished and healthy; had never been sick.

The child's mother had been to the Mayo's a few years previous (1920) where it was said that chronic sores in the mouth were caused by bad teeth. She promptly recovered after removal of the teeth. A Wassermann at the time was negative. The father

had always been healthy, says he had never had venereal disease and a blood Wassermann made at this time is negative.

The child was first seen on Aug. 22, 1924 and the grandmother gave the following history. About nine o'clock of this day, it was noticed that she had some fever, although she was still playing and apparently feeling well. Her grandmother gave her two or three doses of castor oil which she promptly vomited. She became worse and when examined she had a temperature in axilla of 104, pulse 140, very coated tongue, abdomen slightly distended, and she was very nervous with twitching of the eye lids and some spasmodic muscular movements. Lungs normal. Heart sounds normal. There had been moderate bowel movement in the morning, and so far as known kidneys had acted normally. Attention was called to a very slight abrasion on the ball of the right foot evidently a slight hurt from running around in bare feet. A drop of pus had been expressed that morning. She had not complained of pain, but there was a slight enlargement of the inguinal glands of the right side.

Shortly after two o'clock she had a convulsion of short duration. About three o'clock she had another which was promptly relieved by warm bath in bath tub. Wound on foot was freely opened and curetted. Very soon there was another convulsion which did not end until given a dose of morphine and atropine. The temperature dropped to 101.6, pulse 130. Breathing somewhat irregular, but gradually improved. The child never regained consciousness after the first convulsion. About this time it was recalled that the child had a moderate diarrhea two days before; some urine was secured by catheterization; the child was removed to hospital. She rested

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quietly until about eight o'clock when she had another slight convulsion and the attending nurse had to resort to artificial respiration for a time.

Soon after the last convulsion, a spinal puncture was made getting only blood of which there was about four drachms; it coagulated at once. Dr. Watkins then made a spinal puncture getting a very bloody fluid, which proved to be free of pus or organisms. The blood gave a one plus positive Wassermann reaction. Complement fixation for tuberculosis one plus positive. The urine had a trace of albumen, and occasional pus and blood cell.

The child died about midnight of the same day.

In answer to questions, Dr. Shelley said that a definite diagnosis was not made, though it was felt that syphilis was a contributing factor. No blood culture was made.

Case 7022: By DR. E. H. BROWN. Male, age 15 years, well developed and nourished. Physical condition normal except left leg and foot.

About eighteen months ago while playing baseball at school, was struck upon the left ankle by the ball; this injury was very painful at first, but was not severely enough to make him stop playing. The greater part of the pain soon subsided. The ankle continued tender and sensitive for some time. A few months later it was noticed that there was a tendency for the foot and ankle to turn in; this condition became gradually more marked up until the present time. When walking he is unable to place the foot flatly upon the ground—the weight being taken on the outer side of the foot. At the present time there is a general weakness through the ankle but very little pain.

Examination shows a marked deformity of the lower third of tibia; the appearance was typical of a mal-united fracture of the tibia and fibula that permitted an inward deviation of the lower end of the leg, ankle and foot. No irregularities of the bones could be detected by palpation.

The left tibia measured three-fourth inch shorter than the right. There was one inch difference in the circumference at the calf of the legs. Ankle measurements showed three-eighths inch difference.

By physical examination the deformity was thought to be due to a developmental condition. The question of fracture was ruled out by the history, for it would have been impossible for this boy to have continued with his school and games with a fracture that would have produced this condition.

The following is the x-ray report of Dec. 26, by Dr. Watkins:

"Radiograph of this bone does not show evidence of new growth. It is not certain that there has been a fracture, but there is evidence of some lesion in the epiphyseal line of the tibia. This gives the appearance of bone growth of the tibia having stopped—the fibula continuing to grow in length, producing distortion at the ankle joint with rotation of the astragalus."

Diagnosis: Retardation of the normal growth of the lower end of the left tibia, due to epiphyseal injury. The growth of the fibula being normal, this condition produced a gradual bowing of the lower third of the tibia, thus changing the plane of the articular surface of the ankle joint by the growing fibula pushing the outer side of the foot downward and inward.

All long bones have an epiphysis at each end, with the exception of the metacarpals, the metatarsals, the phalanges of the hands and feet, and the clavicles, all of which have an epiphysis at only one end.

The increase in bone length takes place at the epiphyses. In the long bones, ossification always proceeds more rapidly at one end than at the other and the growth is more rapid and continues longer at the end at which the epiphysis is last to unite to the shaft.

All through immaturity the epiphyses freely communicate with the diaphysis; in early life the epiphyses are completely shut off from the diaphysis by the epiphyseal cartilages. The epiphyses obtain their blood supply from the periosteal net work of arteries—large branches of which perforate the thin layer of compact tissue on their exterior, and are distributed throughout the spongy cancellous tissue. Nearly the whole of the blood supply is therefore independent of the diaphysis. Only one or two minute arteries pass into the epiphyses from the diaphysis through the conjugal cartilage. This accounts for the comparatively infrequent occurrence of necrosis of the epiphysis even when the diaphysis is more or less completely displaced from the epiphysis.

Ossification takes place from the center of the epiphysis and proceeds toward the periphery until the entire epiphysis is ossified, with the exception of a thin layer at the junction of the shaft forming the epiphyseal cartilage or disk.

There is no doubt but that this boy suffered sufficient injury to the blood supply of the lower tibia epiphysis to cause this retardation growth, and resultant deformity.

Treatment: In order to bring the foot and ankle back to normal position a sub-periosteal osteomy was done through the lower third of the tibia, two inches above the epiphyseal line, as well as a resection of three-fourths of an inch of the fibula. This permitted a moderate over correction of the deformity; the foot was put in plaster in this position.

The reason for the over correction is that the boy will not reach his full growth for at least another three years, and hence there will be a tendency for a recurrence of the deformity.

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The chances are that the normally growing fibula will cause a sufficient recurrence of the deformity to call for further operative interference. A resection of the epiphyseal end of the fibula may have to be done. The left leg will ultimately be from three-fourths to one and a half inches shorter than the right.

The secretary presented records of two cases of leukemia, summary of which follows:

Case 1923, female, Pima Indian, 32, admitted in drunken condition, with lacerations about head from a fight. The routine blood examination revealed 177,000 leucocytes with anisocytosis, poikilocytosis, microcytes, macrocytes and normoblasts. There were 11 per cent large lymphocytes, 52 per cent polynuclears, 22 per cent basophiles, and 15 per cent myelocytes. On these finds the diagnosis of myelogenous leukemia was made.

Four subsequent examinations showed counts varying from 145,000 to 250,000, hemoglobin from 30 to 45 per cent, red cells 2,350,000, with other findings as at the first examination.

This patient, supposedly healthy, except for superficial wounds, having been shown by the routine blood count to be an interesting medical patient, the secretary of the staff, in consultation with Dr. Dameron, made a complete examination with the following results:

Female Indian. About five feet, two inches tall, weight about 115 pounds. Chocolate colored skin; lips of fair color; wound on back of head; several slight abrasions on left side of face, about eyes. Eyes, dark, pupils round, reacting but sluggishly. Patient breathes freely through the nose. Palpable lymph nodes in neck present. Tonsils present and apparently diseased. Mucous surface of mouth is

abnormally pale. Full set of teeth, two probably devitalized.

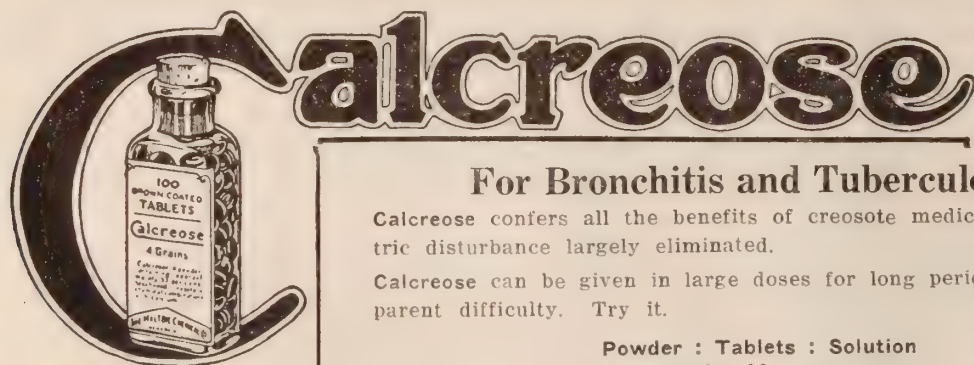
Chest: Well formed. Slight depression above and below the clavicle—little more noticeable on the right than on the left. Percussion shows slight dullness over left hilum. Definite supra-sternal notch pulsation is visible, and palpable. Mediastinal dullness extends up to upper edge of the second rib. Heart dullness 8 cm. to the left of median line, by percussion and auscultation. Apex beat is not visible. Right margin of heart is 4 cm. to the right. Blood pressure, 120/58. Radial pulses are equal and apparently normal. Heart sounds of normal intensity, but systolic murmur is heard at apex, slightly transmitted to axilla; murmur seems to increase in intensity in direction of second left intercostal space. Heard loudest about junction of the left fourth rib and sternum. Slight diastolic murmur heard, also in region of left fourth interspace at the edge of sternum. No axillary lymph nodes are palpable.

Abdomen: Normal in appearance, except for linea alba and median incision scar extending one and one-half inches below umbilicus to pubis. Liver dullness from fourth rib to the costal arch, in mammary line.

The spleen extends from the seventh rib in mid-axillary line to costal arch and is palpable just above the level of the costal arch.

Extremities: Left forearm shows extensive scar deep into flesh from elbow joint to within two inches of head of radius. Practically all of outer portion of muscle is destroyed. There is slight edema just above the right ankle, probably from slight wound on ankle.

Patellar reflexes are active and equal. Achilles and Babinski, Gordon and Oppenheim are normal. Posi-



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tive Chaddock. Abdominal reflexes not obtained.

Vaginal examination: Perineum shows posterior laceration. Cervix shows very marked laceration. Small uterus palpable. Slightly more resistance to the left of cervix than to the right.

Laboratory findings: Blood: See report of routine examination, above; the Wassermann reactions were strongly positive, Kolmer titration being 30 plus; the Kahn test was also positive. Complement fixation reactions for gonorrhea were positive; complement fixation reactions for tuberculosis were negative.

Diagnosis: Scalp wound. Wound of ankle. Scars from former injury of left forearm. Cardiac lesion, probably double aortic and mitral. Dilated aorta. Syphilis; myelogenous leukemia. Lacerated cervix and perineum. Devitalized teeth.

Case 5325; male, age not given. Brought to the hospital in a condition unable to give history and no friends or relatives could be found.

Examination showed fairly well nourished, medium sized man, slightly cyanotic, lying restlessly in bed, apparently apprehensive. Slight icteric tinge to the conjunctivae; pupils equal, regular, and reacting to light and accommodation; no ptosis, nystagmus, or strabismus. No enlargement of the thyroid, but the posterior auricular lymph nodes are markedly enlarged, firm, easily movable, and about the size of No. 4 buck shot.

Apex impulse of the heart is seen and felt feeble in the sixth interspace, 12 cm. from the mid-sternal line. There is a soft blowing systolic murmur at the base, transmitted over all the pericardium. This murmur is probably functional. There is no bruit in the region of the aortic valve.

The right lung is resonant throughout. Expansion is good. There are no abnormal sounds. In left lung breath sounds indistinct but there are no rales except at the apex extending as low as the fourth interspace, where a few scattered coarse rales are heard.

Rounded margin of the liver is felt four finger breadths below the costal margin, tender but not nodular. There is an area of increased dullness to percussion in the left hypochondrium, which is apparently in front of the colon, and suggests the possibility of enlargement of the spleen. No definite enlargement of the spleen is felt.

The skin over the entire body is dotted here and there with hemorrhagic areas resembling purpura hemorrhagica. Bones and joints are negative, except that there are areas of periosteal thickening in shin bones suggesting the possibility of an old syphilitic periostitis. Throughout the surface of the body are enlarged glands about the size of No. 4 buck shot, freely movable, and not adherent. Glands in the groin are noticeably enlarged, being the size of No. 3 buck shot.

The urine showed albumin, casts and acetone. The blood examination showed 90 per cent Hbg; color index 0.9 per cent; 4,970,000 reds; 24,600, whites with 18 per cent leukocytes, 80 per cent neutrophils, 1 per cent eosinophiles, and 1 per cent basophiles. The Wassermann was one plus positive. Death occurred at the end of six days.

Autopsy by Dr. Watkins:

Fairly well nourished man, with numerous small superficial skin ulcerations, having hemorrhagic crusts. All the superficial lymph nodes enlarged, the inguinal group being most enlarged. Skin and muscles showed a yellowish tinge. In chest, right lung was normal. Left lung showed dense pleural adhesions. Heart not enlarged. No evidence of aortic enlargement or valvular disease. Anterior and posterior mediastinal lymph nodes much enlarged, soft and friable.

Liver much enlarged, not weighed. Showed innum-

erable discrete yellowish spots, those on the surface projecting as small granulomatous nodules. Throughout the cut surface the same appearance, the entire liver being filled with these miliary areas. Spleen enlarged, showing the same appearance as the liver, with the projecting nodules of about rice grain size, with entire substance filled with the discrete areas of similar size. Polycystic kidney on each side. All the lymph glands of the abdomen enlarged, soft and friable.

Sections of lymph nodes show extensive areas of softening with loss of cell outline and hemorrhagic extravasation. There are numerous areas of infiltration by atypical cells, resembling large lymphocytes. Sections of spleen show infiltration with cells as found in lymph nodes, this change being chiefly perivascular. Sections of kidneys show marked degeneration of epithelium of tubules, with extensive desquamation and with dilation of both convoluted and straight tubules, and there are numerous microscopic as well as macroscopic cysts. Sections of liver show extensive perivascular infiltration by large atypical cells, similar to those found in lymph nodes and spleen. There is a moderate amount of passive hyperemia present.

Microscopic Diagnosis: Leukemia with leukemic infiltration into liver, spleen and lymph nodes.

DR. H. P. MILLS opened the discussion on leukemia as follows: A systemic disease characterized by hyperplasia of the leukocyte producing tissues and accompanied by a secondary disturbance of the composition of the blood which manifests itself in

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alterations in the relative proportion of the leukocytes, the appearance of the forms not normally found in the total number of white cells.

Two general types are described, the myeloid or spleno-myelogenous and the lymphoid or lymphocytic. In the former the essential pathology lies in the spleen and bone marrow and the blood contains forms of granulocytes or myelocytes and there is associated disturbance of red cell production, with resultant anemia of varying degree. In the latter there is a great excess of lymphocytes in the peripheral blood and there is associated generalized hyperplasia of lymphoid tissues of the body.

In chronic myelogenous leukemia the spleen is usually enlarged, frequently to many times its normal size and on microscopic section shows extensive infiltration with bone marrow cells which largely replace the follicles, and the venules of the splenic pulp are filled with myelocytes, polymorphonuclear neutrophils, mononuclear cells and nucleated red cells. The bone marrow shows cellular hyperplasia, has a pinkish color and the capillaries are filled with myelocytes and leukocytes of all kinds. The lymph nodes usually show only slight enlargement and microscopically may present little change. The blood changes are very marked. The total red count is low, except in early cases as is also the hemoglobin, but the color index is usually high. Nucleated red cells are commonly present and abnormally of size and contour of red cells is usually evident. The most striking feature of the blood picture is the great increase in the number of leukocytes. The count is usually above 100,000 and sometimes reaches 1,000,000. The differential count varies much in different cases but the presence of myelocytes in the peripheral blood is a prominent feature, the percentage varying from twenty to eighty.

In lymphatic leukemia the spleen is enlarged, but to a less degree than in the myelogenous type. The bone marrow has a pink or reddish color and the erythroblastic and myeloblastic tissue is largely replaced by lymphocytes. The lymph nodes over the entire body show marked hyperplasia and on section show almost solid masses of lymphocytes and loss of all resemblance to their original structure. This excessive deposit of lymphocytes is seen on section of practically all organs of the body containing lymphoid tissue in any form.

The blood picture is more that of secondary anemia, than is seen in the myelogenous form, the hemoglobin and red cells are both lowered and the color index usually low. Nucleated red cells occur, but not so commonly as in the myelogenous type. The increase is in the lymphocytes, these reaching a percentage of forty to ninety.

Rarely blood counts are found in acute infections involving the lymphoid structure, in which the differential count is reversed, there being a moderate leukocytosis with eighty to ninety per cent lymphocytes. These cases usually return to normal, but should be held under observation as possible early cases of leukemia and frequent counts made. Occasionally there are periods in the course of lymphatic leukemia, during which the clinical findings remain unchanged, but the blood picture becomes practically normal; and rarely there are cases in which these findings persist throughout even to the death of the patient. To this group of cases has been given the term aleukocythemic leukemia. Case 5325 apparently belongs to this type. These cases have all the clinical and pathologic findings of lymphatic leukemia, except that the blood picture remains practically normal.

DR. O. H. BROWN presented Case No. 33 as follows:

Male, 56 years of age. He fell from a tree to the ground, a distance of perhaps 10 feet. He struck the

ground on his back, perhaps touching the ground first with his buttock. The ground onto which he fell was a drive and hence was very hard. He was picked up by his family and neighbors and placed upon an army cot. Here he was found by the physician. He was pale; his body was cold and covered with free perspiration. His pulse however was good. He was complaining of severe pain in his back and abdomen and his breathing was jerky and accompanied with a grunt. The legs were paralyzed. The abdomen was large and somewhat tense, but no special areas of spasticity could be elicited. A working diagnosis was made of shock, fractured vertebra hemorrhage or other injury of the lower cord and a possible abdominal injury. A dose of morphine (one-fourth grain) strychnin .1-30 gr.) and tropin (1-150 gr.) was given hypodermically.

When ambulance arrived the door would not admit the cot. The drivers were instructed to return for an ambulance with a rear door.

He was placed in the ambulance without being disturbed on the cot. At the hospital about a dozen hands were put under him and he was gently rolled over enough to slide under him a Bradford frame. He was carefully drawn by many hands into a comfortable position on the frame. By means of this frame he could be lifted to the x-ray table, to bed, and back again if necessary. It took several attempts to get satisfactory x-rays as he was a heavy man and the canvas and rope on the Bradford frame cast shadows.

After he was put to bed a more thorough physical examination was made. Skin was cold, pale and covered with perspiration; blood pressure was 90/60; abdomen was distended and generally tense; legs paralyzed; patellar, achilles and toe reflexes were absent; pin pricks and touch were not felt from two inches below the umbilicus in front and the twelfth dorsal vertebra behind to the soles of his feet; heat and cold were not felt in the paralyzed area. The diagnosis at this point was the same as before. It

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was concurred in by consultant. Operation was thought inadvisable, at least until morning.

The x-ray, the next morning disclosed a fractured twelfth dorsal vertebra and a fractured rib near the spine. The signs of shock were still present, the bladder was full of urine which he was unable to void and evacuation of his bowels had not been obtained. Catheterization of bladder obtained urine with a trace of blood; this probably came from the catheter.

Operation was again postponed. Purges and enemas were given with ultimately slight results. His blood pressure came up under pituitrin and sodium coffein benzoate to 120/80. The spinal fluid was nearly pure blood and was scanty. Early in the morning of the fourth day he vomited a large amount of dark colored fluid that the night superintendent thought was fecal in character. This caused the operation to be postponed again.

From this on there was a gradual decline and he died near the end of the fifth day. He vomited a large amount of fluid just before death.

An autopsy was refused. The death certificate was signed paralysis of bowels, secondary to fractured twelfth dorsal vertebra and spinal cord hemorrhage.

At one time it was considered that there might be a ruptured bowel, but was finally considered improbable. It was also considered that an acute dilation of the stomach might have been an important cause of death.

DR. E. P. PALMER: Fracture of the bony structure of the spine is always a grave injury and its diagnosis, prognosis and management present serious problems to the surgeon. Fracture-dislocation usually produces a partial or complete separation of the segments of the cord, so complete recovery is rare. Regeneration of the non-neurilematous elements of the cord does not occur, so, following a division of the cord between the atlas and the first lumbar vertebra, no improvement is to be expected except through extra spinal nerve anastomosis. There is always uncertainty regarding the pathological condition. The x-ray is of assistance in determining the injury to the bony structure, but unfortunately, the extent of the injury to the bony canal is no guide to the damage done the cord. There is but one safe course in all cases of spinal injury presenting deformity and paralysis, when the patient's condition will permit, that is, to perform an immediate exploratory laminectomy to determine whether operative treatment will improve conditions. We must remember that in all dural and bone work, our operative technique must be perfect. I wish to emphasize the importance of immediate operation if the patient's condition will permit, as delay is dangerous. The cord may be pressed upon by bony fragments or by a blood clot within or without the dura, which pressure, if relieved at once, will leave the cord uninjured, but if allowed to remain a few days or weeks, will result in degeneration. It has been shown at many late operations that the only lesion to the cord was compression, but the late operation was of no avail as the degeneration had occurred. An early operation in such cases, would, of course, have relieved the pressure and prevented the degeneration changes. In the case under consideration there was a fracture-dislocation of the twelfth dorsal vertebra resulting in anesthesia and paralysis to the height of anterior superior spinous processes in front and to the point of spinal injury behind, resulting in retention of urine and feces. When the patient was first seen it was thought that he could be gotten in good enough condition to permit of laminectomy under nitrous oxide-oxygen novocain anesthesia and every effort was made to improve his condition with that object in view. Twice when he seemed improved

the time was set for operation and the operating room was ready; each time symptoms arose which prevented us from undertaking operation.

DR. O. H. BROWN: Tilney and Riley say that the parastaltic action of the intestines seems to be stimulated by the vague and inhibited by the sympathetics. In case our diagnosis is correct the spinal cord lesion was a stimulating one and caused over action of the sympathetics. Of course there may have been a thrombus in a portion of the intestines.

DR. TUTHILL said that the man must have had more than a fractured vertebra as such cases usually live about five months.

DR. MILLS said the twelfth dorsal is about the right limit for the sacral sympathetics.

DR. BANNISTER said he thought the question of paralysis of bowels from spinal cord pathology was particularly interesting to him as he had had two cases lately with spinal cord lesions both of which had to have bowels moved for them, and had serious results therefrom.

Adjourned.

Orville Harry Brown, Sec.

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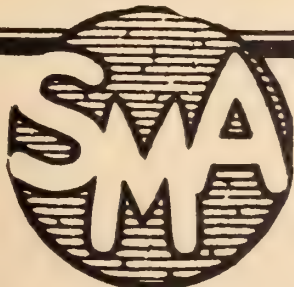
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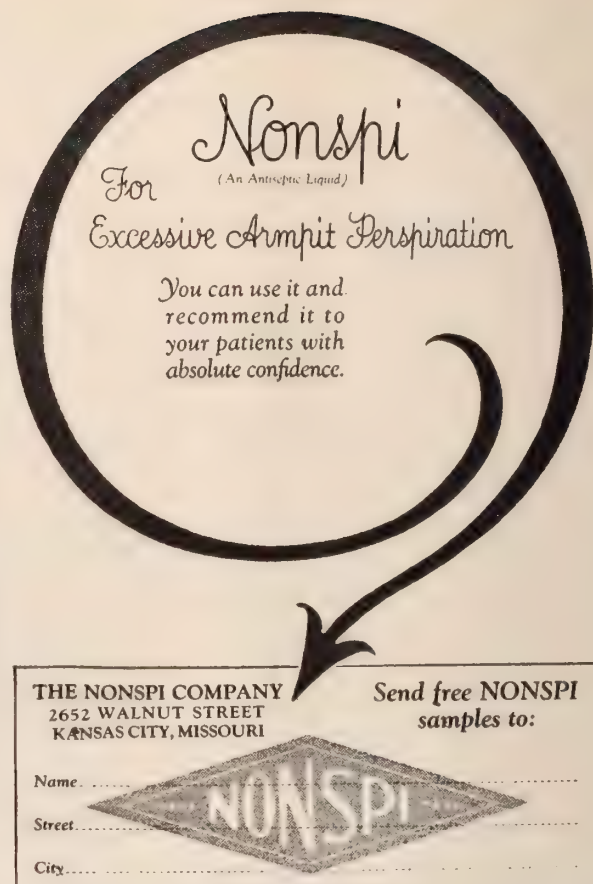
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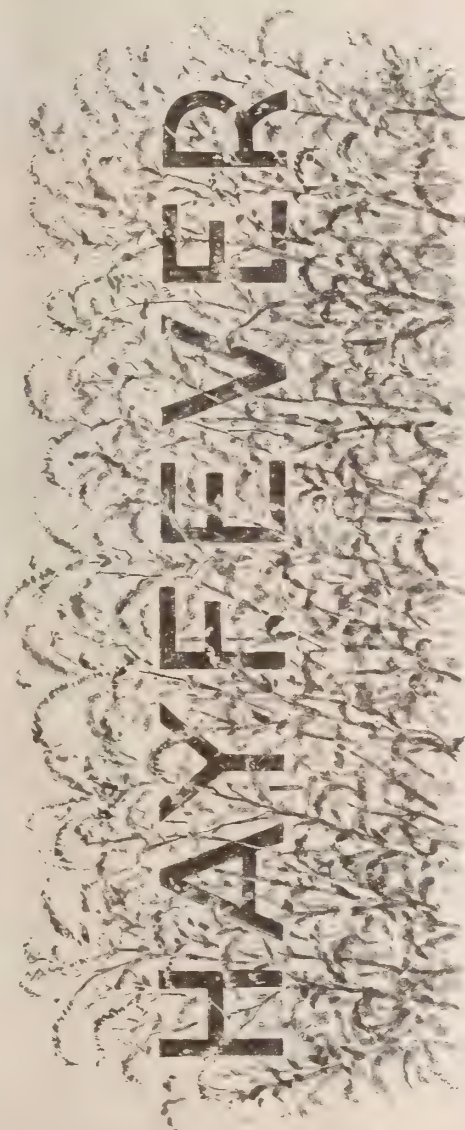
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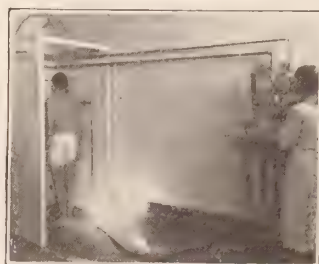


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MEDICAL AND SURGICAL SERVICE IN THE INDUSTRIAL WORLD.

S. D. SWOPE, M. D., American Refining & Smelting Co., Chihuahua, Mexico

Read before the Twelfth Annual Meeting of the Medical & Surgical Association of the Southwest, at Tucson, Ariz., Nov. 11 to 13, 1926

The rapid advance in the production of manufactured articles and the enormous increase in the size and importance of industrial institutions in the last few years, has changed the whole aspect of, and attitude towards, the subject of industrial medicine and surgery. From the individual producer and small factory personnel we have leaped into an era of employment by the thousands; mass production of manufactured articles, with transportation, housing, sanitation and health problems that were little dreamed of a few years ago, confront us on every side.

The relations of employee and employer to the medical profession have undergone so rapid an evolution that it amounts to almost a revolution of ideas. A few years back, the superintendents of our larger industrial institutions looked upon the occasional visits of the physician as necessary evils and upon the physician himself as a sort of excuse and as a renegade from the legitimate profession, from which he had drifted by reason of incompetency and necessity. His salary was in proportion to his social standing and his opinion of little value. The advancement of mechanical ingenuity, the more common use of complicated mechanical devices, the improved education of the general public, the great increase in the legal regulations defining the relations of laborer and employer and the recognition by the larger industries of the value to efficiency and production secured by employment of competent medical and surgical service, have changed the whole aspect, and today the industrial medical man is coming into his own.

The one great difference between private

practice and industrial service, is the necessity of serving two masters. In consideration of our Aesculapian oath, our first duty is to the sick and wounded who may come under our care—master number one; our next duty is to our employer who feeds and clothes us with a salary—master number two. Fortunately, the service of these two masters is embodied in one procedure, for what is good for the man is also good for the master in this work. The difficulty often found here is the want of executive ability, diplomacy and medical skill, which the surgeon is required to possess and exercise in his dual capacity.

The laws of the various states and many countries have attempted to define and regulate the relations of the sick and injured employee and the interested employer. In many instances these laws are influenced by personal and political influences, leaning in favor of one side or the other in proportion to the pressure brought to bear on the law makers; but, on the whole, they tend to regulate the relations and protect the interests of both parties. With their influence, and a proper medical adviser as guide, the employer can no longer impose on the ignorance, weakness and necessities of the laborer and the designing impostor can no longer take advantage of the conscientious, considerate employer.

Indemnity laws, which at first seemed to be a terrible hardship to employers, have served to do away largely with charities and damage suits and have proved real blessings to both parties concerned.

The industrial surgeon has before him the ordinary diseases to which mankind is heir and the various special diseases incident to the occupation he follows. The workman is generally ignorant of the character and importance of his ailments. His injuries vary from an A, or no lost time accident, to an E, or death. Then we have the improvident, designing impostor to contend with. Concisely, we have constantly on our hands the sick, lame, and lazy, with

the necessity of intelligent classification. It is to our own interest, and to the interest of the afflicted and their employer, that they are relieved and returned to full duty in the shortest possible time, that we may have our duties lessened and reputations increased, that the afflicted may return to full earning power with its lessened psychoneurotic effect, that their services in the industrial machine may be resumed and the necessity of charity or indemnity stopped.

I am in the habit of classifying my afflicted in four divisions: (1) Those who are sick and know it;

(2) Those who are sick and don't know it;

(3) Those who think they are sick and are not sick;

(4) Those who know they are not sick but wish to convince us that they are.

The industrial surgeon must be a versatile man; he is often father-confessor, judge and jury and must always be a friend. He can have no specialty. He must have memorized, and be able to play at a moment's notice, the whole symphony of medicine and surgery with the allied specialties as special chords. We are intrusted with two great weapons that we should be able to wield with skill and efficiency—prevention and cure. Cooperation between management, physician and workmen is an absolute necessity for success.

The treatment of ordinary diseases differs little in industrial institutions from that of private practice, only varying with the difference of local conditions. The occupational diseases require our special attention and a superior knowledge of the subject above that of the private practitioner, since he seldom comes in contact with these affections.

Each industry has its own problems to be carefully considered and worked out. Accidents vary in character with the occupation considered. First-aid treatment and restoration of function are matters of knowledge and experience, while judgment is a personal equation of the individual practitioner.

Industrial medicine differs little in our own great southwest from that in other localities except in the character of industries and personnel of laboring classes. The production of metals in its unrefined form constitutes the largest part of our mass production industries—mining and smelting. Our workmen are largely drawn from the poorer classes of Mexican origin and are ignorant of sanitation. They are low in

the scale of mentality, careless as to exposure to injury, and therefore require special attention.

In the plant where I am working in Chihuahua, Mexico, we employ regularly about fifteen hundred men. We have about one hundred accidents a month, about one-third of which are lost time accidents.

Being the largest lead smelting plant in the world—producing about 600,000 pounds of lead, silver and gold bullion each day—lead poisoning and carbon monoxide asphyxiation, with arsenical burns, require our special attention. Careful bi-monthly examinations and constant attention have reduced these ailments to a minimum far below what they have ever been before. We are now making a series of examinations of the blood of workmen employed in exposed places, for the presence of carbon monoxide in the blood, and microscopical and chemical examination of the blood and excretions of those exposed to lead fumes and dust, with the further anticipation of early absorption.

I feel that I cannot close this paper more appropriately than by quoting a passage from *The Journal of Industrial Hygiene* of January, 1926, with acknowledgement to Dr. Hertslet:

"From every point of view, humanitarian, economic, financial, and scientific, it is absolutely clear and must be increasingly recognized by those at the head of large industries, that a fully equipped medical department, where all modern methods of surgery and rehabilitation are possible, is an essential part of a properly organized concern, and forms a sound financial investment."

TREATMENT OF FRACTURES OF ELBOW AND FOREARM

R. L. RAMEY, M. D.
El Paso, Texas

Read at the Twelfth Annual Meeting of the Medical & Surgical Association of the Southwest, held at Tucson, Ariz., Nov. 11 to 13, 1926.

I will mention some of the most common fractures of elbow and forearm. They are the epiphysis of the humerus; the external and internal condyles; T and Y fractures involving the joint, the coronoid process and head of radius and olecranon. Of the forearm: Colle's, in which only the radius is involved; chauffeur's fracture, which occurs from cranking automobiles. Then there is another type which, as a rule, are produced by greater violence, in which both bones are broken and the soft parts often severely contused. Fractures of the fore-

arm may involve either the elbow or wrist joint.

The important point in the treatment of fractures of the elbow and forearm is to get good function. I mean by good function satisfactory flexion and extension of the elbow, pronation and supination of the forearm. The most common causes of loss of function of the elbow are injuries involving the joint, with a great amount of callus, loose pieces of bone, or severe contusion.

The most common cause of loss of function of the forearm is not getting the bones thoroughly separated. This often happens in fractures involving both bones, the callus extending from one bone to the other, converting them into one, as it were, rendering pronation and supination impossible. Comminution of the bones is also a cause of this condition.

We should remember, in dealing with fractures of the forearm, that the radius is much more important than the ulna at the articulation with the wrist; and the reverse is true of the articulation with the elbow, the ulna being the more important by far.

There is no definite rule for the treatment of fractures; each case is a law unto itself. For instance, we must know whether the fracture is simple, compound or comminuted, whether there is a great amount of contusion or injury to soft parts, whether there is joint involvement, and the amount and character of displacement; all of which can be fairly well determined by a careful examination and by x-ray.

There are certain rules that should be followed in the treatment of these cases. If we have a compound fracture, it should be regarded as a dirty wound. If a small or punctured wound, the opening should be enlarged and thoroughly cleansed. For this I prefer ether poured into the wound, followed by mercurochrome or iodine, and if there is little or no injury to soft parts, close it up; otherwise, leave it open.

If there is much contusion or swelling of the parts, apply splints loosely and use hot applications until the swelling is reduced. The greatest mistake that is often made in the treatment of fractures is, in my opinion, the application of tight dressings; they are uncomfortable, keep the parts swollen and interfere with repair.

If there is much displacement, it is always better to give your patient a general anesthetic as you can make a better examination and get better reduction of the parts. This can best be done under the fluoroscope.

It is my custom, in nearly all fractures of

the elbow, to supinate the forearm and put it up at acute flexion with the arm held in position by adhesive plaster. Passive motion should be undertaken not later than ten to fifteen days after reduction. Exceptions to this rule are fractures of the olecranon, which should be put up straight or at right angles, according to position of the fragments.

In fractures of the lower forearm, I like the ordinary anterior and posterior wooden splints with an extra pad, or pads, to retain the bones in proper position with the arm in mid-supination, thereby separating the bones as widely as possible. This splint should always immobilize the wrist joint. We usually use this splint for one week and then put on permanent dressing of plaster of Paris. If the fracture is higher up, and especially if both bones are involved, then the elbow, as well as the wrist, should be immobilized with plaster cast. There are fractures, however, sometimes requiring operative procedures, in which we have loose pieces of bone fractured off, such as a piece of the condyle or epicondyle or the head of the radius, which can not be replaced and interfere with the fracture of the joint and have to be removed. Also there are fissural fractures of the lower end of the humerus into the joint, with wide separation, which you have to fix with some foreign material to avoid an excess amount of callus. With bones of the forearm, surgical interference is most often needed when both bones are broken and you are unable to get the proper separation. In this case, if you plate the radius you will have but little trouble in getting a satisfactory position of the ulna, and put on a plaster of Paris splint. Fractures of the arm involving the wrist joint also sometimes require open operation. In these cases we should use the simplest appliances and disturb the soft parts as little as possible.

SUMMARY

1. Give a general anesthetic if the fracture cannot be easily reduced.
2. Manipulate bones as gently as possible.
3. Use the dressings you are most familiar with; do not try out every new appliance that comes along.
4. Never apply your dressings tightly.
5. Watch circulation of hand after reduction.
6. We never put on a circular plaster splint without cutting it through with wire saw.
7. Never do an open operation if you can get satisfactory function without it.

IMMEDIATE MANAGEMENT OF INJURIES OF THE BACK

JOHN E. BACON, M. D., F. A. C. S., and
WM. B. WATTS, Jr., M. D.

Miami Inspiration Hospital, Miami, Ariz.

Read before the Twelfth Annual Meeting of the
Medical-Surgical Association of the Southwest,
held at Tucson, Ariz., Nov. 11 to 13, 1926.

This paper is inspired by a request for information as to the management of severe injuries of the back from the time of the accident up to, and through, the period required for diagnosis. That it is a very pertinent inquiry is revealed by the fact that an application for abstracts, made to one of the largest medical service bureaus in the country, brought forth about twenty-five abstracts of articles dealing with diagnosis and treatment, but not one dealing with the way an injured person should be handled immediately after the accident, how transported to the hospital or home, and how handled during the process of diagnosis. We have a fairly large library which is also silent on the subject and one of us recently attended the meeting of the American College of Surgeons at Montreal, during which an entire day was devoted to a symposium on Industrial Surgery, covering all its aspects except this one, so that it seems as though one of the most important periods in the history of an accident is universally ignored.

In our industrial work, which has to do with injuries received in and about mines, shops and haulage systems, we have found that a thorough training in modern first aid is of the greatest value and a first-class investment. Our organizations have found it well worth while to employ a full-time, well paid, thoroughly trained engineer to instruct all the bosses and as large a number of the men as possible, in the elements of first aid and the transportation of injured men. This policy has been found of particular value in management of injuries to the back.

With the tremendous increase in the number of injuries to the back, caused by "beating the train to the crossing" and "the other fellow to the corner," and the greater number still to occur with the steady increase in the number of automobiles; what to do when the accident occurs must be taught to increasingly larger numbers of people, and, as usual, the doctor must be the missionary in this as in every other line of endeavor contributing to the health, safety and comfort of the people.

A missionary, however, must be fairly grounded in the elements of what he is to teach, and, therefore, a resume of what ex-

perience has taught the profession in this work should be presented frequently to impress us all with the duty we have of improving the kind of preliminary care these injured people are getting.

Fractures of the pelvis and of the transverse processes of the vertebrae are much more common than we used to believe, as shown by accumulating radiographic statistics. Fractures of the bodies of the vertebrae are also more common than we are still inclined to believe. They can, and do, occur with no signs at all (see Case 1, below), or with so little apparent shock and so few symptoms that some of them are overlooked entirely until symptoms occurring months, or years, later, reveal the fact (Case 2). Therefore, we believe that, when an injury has occurred accompanied by forcible bending forward of the body or jack-knifing, or of sufficient violence to have possibly caused a fracture of the spine, the case should be treated as one of fracture until the diagnosis is complete.

1. G. Q., Mexican, miner, aged 24, on October 9, 1923, was caught beneath muck which sloughed from the roof of a drift. There were contusions and abrasions of both scapular regions, and of the entire lumbar region; x-ray examination revealed fractures of the left transverse processes of the first, second and third lumbar vertebrae, and the right transverse process of the second lumbar. There was a compression fracture of the first lumbar vertebra sufficient to produce a moderate wedge-shaped deformity of the body. We were unable to get this man to stay in bed, and, after a few days treatment, he insisted on being returned to work. He was given a release on the twenty-seventh day after his injury. He has worked steadily ever since and has not complained of symptoms referable to the injury of his back. This case is cited to show that a compression fracture may exist without symptoms or physical signs indicative of such a lesion.

2. G. H., American, farmer, aged 38, came to us for examination in September, 1923, one year after an accident in which he was jack-knifed beneath a hayrack. For about two weeks following the injury he could not do heavy lifting; after this period he resumed his usual duties, but was always conscious of "soreness" in his back. About six months from the date of injury a small lump appeared over his lower dorsal region; the pain, disability and deformity steadily increased, and he finally decided to consult a doctor. When seen by us there was a well-defined kyphosis at the level of the ninth dorsal vertebra, tenderness to pressure, and immobility of the eighth, ninth and tenth dorsal vertebrae. X-ray examination revealed an extreme wedge-shaped deformity of the ninth dorsal. He was referred to an orthopedic surgeon for treatment but decided that he could not give up the time required, and in March, 1925, developed a complete motor and sensory paralysis of both legs, incontinence of urine and feces, and anesthesia extending to the level of his umbilicus. We have included this case for the purpose of pointing out the possible late developments in untreated "crush fractures."

The usual procedure after an accident is to send hurry calls for several doctors—all very well in its way, since a hypodermic of morphine is nearly always required, but

beyond that, in the absence of wounds and bleeding, the doctor is just as helpless as any other individual in the crowd unless he has had the forethought to ask for an ambulance to follow at once. The proper thing to do is to take the patient to the nearest, or best, hospital in such a manner as will not increase the damage already done. To crowd a patient with a fracture of spine or pelvis, into the back seat of an ordinary car, in the name of speed, is entirely wrong. Such patient should be stretched out flat, covered up, kept warm, and not moved until a stretcher can be secured, or one improvised, and then transported in an ambulance or a truck to the hospital, or, if necessary, to the home. It is bad practice to grab him by heels and head in lifting him to the stretcher. The body should be lifted horizontally by the method taught in first aid classes, to minimize movement in the fractured parts.

On arrival at the hospital it is not unusual for the patient to be turned from side to side in giving a bath or moved from stretcher to x-ray table and back again to bed, with scant regard for the nature of the lesion. Here, again, all cases must be regarded as fractures until definitely found not to be, and turning, rotation and bending of the body should not be done. No one can ever know the amount of extra avoidable damage that has been so inflicted.

Stereoscopic roentgenograms can be made without damage and will yield information sufficient to proceed with proper immediate treatment, and will indicate to the surgeon and roentgenologist the feasibility of turning a patient on the side for the purpose of obtaining a lateral film. The indiscriminate practice of turning a patient on his side regardless of pain and without preliminary knowledge of the extent of the lesion, cannot be too strongly condemned. Such procedure may be the cause of increased bleeding into the neural canal and of movements in the fracture area that will do more damage in a few minutes than the doctor can ever undo. The patient should be lifted on a strong blanket or canvas sheet, by many hands, and so transferred without bending the body. It occurs to the writers that the flat top Bucky diaphragm is a great improvement over the original curved-top diaphragm, and suggests the possibility of being mounted on an upright stand for the purpose of obtaining lateral views of a spine without the slightest inconvenience or hazard to your patient.

We regard the air mattress or water mattress as almost indispensable in the care of

these cases. The care of the skin, which is of so much importance, is made much easier for the patient, as the soft mattress can be pushed away in selected places without turning the patient, and it is clear that the pressure is evenly distributed over the skin of the back. Even if it is necessary to apply a cast or the double-shell cast of Os-good, still the air cushion is most desirable. We have employed the air mattress in all of our cases of fracture of vertebral bodies and have found that, in most of the cases, the plaster cast may be omitted until it is desired to get the patient up.

The next point of importance is that there is no great need of immediate surgical interference and that a careful study of the patient as a whole will repay the effort. Concomitant lesions may be discovered. The neurological findings will give information as to the site and gravity of the lesion in the spine. The reaction observed will yield an estimate of the probable course of the case, and of the resistance of the patient. The only indication for immediate laminectomy is an evident increasing paralysis due to hemorrhage within the dura, or for depressed fracture of the arch if revealed by x-ray.

In an experience covering fifty-two fractures of the vertebrae, of which ten were of the bodies, we have found no occasion to do any surgery, and do not regret our decisions in the light of the subsequent progress of these ten cases. Nine of them were fractures of hyperflexion (jack-knifing) and one was caused by a fall, landing on the feet. Of these ten cases, three died within a few days from associated lesions. Two which presented total paraplegia due to lateral displacement of fractured vertebrae, have partially recovered, but are unable to work. One has returned to light work. Three have resumed their regular duties. One is still under treatment, progressing satisfactorily.

A detailed report of the fifty-two cases of fractures of the spine, with discussion of causes, symptoms, diagnosis and treatment will be presented in a subsequent paper.

SUMMARY

Fractures of the spine and pelvis are becoming more common, due to greater use of the automobile, and should be suspected in every case of injury to the back.

Educational work by our profession, concerning the immediate care and transportation of such cases, is needed. All of these cases require hospital care and radiographic study.

Every hospital should be equipped, to aid the surgeon responsible for this work, with

adequate x-ray apparatus, air or water mattresses, special table for plaster casts and special operating facilities for operation when required.

HEAD INJURIES WITH EAR SYMPTOMS

F. P. SCHUSTER, M. D.
El Paso, Texas

Read before the Twelfth Annual Meeting of the Medical & Surgical Association of the Southwest, held at Tucson, Ariz., Nov. 11 to 13, 1926.

About forty per cent of all head injuries produce ear symptoms. These are impaired hearing, dizziness, tinnitus and nystagmus, which not only occur at the time of injury but, in those cases which do not terminate fatally, may persist indefinitely or throughout life. As a result, a certain amount of disability is produced, especially in occupations requiring perfect hearing and balanced mechanism. The industrial surgeon is frequently called upon to estimate this disability and to distinguish between real organic pathology and functional disturbances variously called neurasthenia, occupational neuroses, hysteria and malingering. This may be extremely difficult to do, but, after a careful consideration of the mechanism and pathology of the injury, and the checking up of the subjective complaints with objective tests, we are usually able to arrive at a fair estimate.

I shall discuss three phases of head injuries:

1. Concussion of the brain with ear symptoms;
2. Concussion of the brain combined with concussion of the labyrinth;
3. Concussion of the brain combined with fracture of the skull.

CONCUSSION OF THE BRAIN WITH EAR SYMPTOMS

Let us consider for a moment the mechanism and pathology of concussion of the brain with inner ear symptoms.

When a blow is received on the head, the skull, being an elastic body, has the force transmitted to its contents—that is, the brain, spinal fluid and vessels. There is produced an acute augmentation of intracranial pressure. The effect of this on the brain substance is a compression.

The effect of the acute augmentation of intracranial pressure on the spinal fluid is to force it out of the lateral ventricle through the third and fourth ventricles, toward the central canal of the spinal cord, which is very small in caliber and dams back the fluid. This back pressure compresses the floor of the fourth ventricle,

producing microscopic hemorrhages and, later, degenerative changes in the vestibular nuclei.

The effect of the increased pressure on the blood vessels, is to produce a momentary compression followed by a changed circulation, characterized by the fact that the blood flows slower through enlarged or dilated vessels. This is due to a vasomotor change and is termed praestatic blood circulation. It results in exudation and leukocytosis about the vessels. These facts have recently been established by experimental studies on animals and by microscopic postmortem studies in man, principally by workers in the Vienna clinic. The greatest part of aural symptoms of concussion are produced by this praestatic circulation. Of utmost importance, however, is the fact that this condition is often permanent, lasting throughout life, and it continues to produce symptoms. Consequently, in concussion of the brain, we frequently find symptoms of persistent intermittent attacks of dizziness coming on without apparent reason, nystagmus, and, at times, tinnitus. There is a notable absence of impaired hearing apparatus. When this pathology can be demonstrated clinically, the prognosis of concussion is not good, because the attacks of dizziness tend to persist throughout life.

The disability has been estimated in France, in Austria and in Germany at around forty per cent and even higher, if the occupation requires a perfect balance mechanism. Such a case is cited from the medico-legal standpoint, by H. Joliet, of Paris. Following concussion of the brain without fracture, the patient presented deafness, headache, tinnitus, vertigo and a changed visual field. The incapacity was estimated at forty per cent, which, however, was later reduced to twenty per cent because it was proved the patient was not in perfect physical condition previous to his injury.

CONCUSSION OF THE BRAIN COMBINED WITH CONCUSSION OF THE INNER EAR.

By concussion of the inner ear, we refer to all changes found in the inner ear following head injury without fracture. These changes are always secondary to concussion of the brain. The ductus endolymphaticus and the internal auditory meatus are the points where concussion of the brain affects the inner ear. The increased spinal fluid pressure produces, momentarily, a faster lymph current in the inner ear. Therefore the resultant symptoms are momentary. The effect on the blood vessels of the ear, however, is similar to that

produced in the brain—that is, a praestatic circulation with a slower blood current through the dilated vessels and consequent exudation and leukocytosis. It is this exudation in the ear spaces which produces the symptoms. The pathology is similar to a vasomotor rhinitis and is easier to demonstrate by objective tests. The symptoms produced depend on the amount and location of the exudation. Thus, we have four types of clinical pictures produced:

(1) If the exudate is in the perilymphatic spaces only, there are no vestibular symptoms, but in the cochlea there is an interference with sound conduction and a middle ear type of deafness is the result.

(2) If the exudation is in the peri- and endo-lymphatic spaces, there are produced spontaneous symptoms of dizziness and nystagmus, in addition to the middle ear deafness.

(3) If this exudate persists over a long period of time, we get, in addition to a secondary inner ear type of deafness, an absence of caloric vestibular response, but the labyrinth may still react to the stronger turning tests.

(4) Finally, this may produce a complete deafness, with absence of both caloric and turning responses.

The case reported by Field of complete traumatic destruction of vestibular function, with slight coincident cochlear involvement, is probably of the first or second type.

The prognosis of concussion of the brain, with concussion of the labyrinth, is not good. If hearing is impaired following injury, it is usually not only permanent, but also progressive. Tinnitus is severe and very difficult to relieve. Dizziness tends to recur in attacks. The disability estimate is but slightly higher than for simple concussion and varies according to the occupation.

CONCUSSION OF THE BRAIN WITH FRACTURE OF THE SKULL.

Fractures involving the temporal bone may be extensions of fractures of other portions of the skull and, hence, the etiology is, in general, the same as for skull fractures.

Briefly, they may be produced (1) by indirect violence, as by radiation of a blow or fraction from the vertex; (2) by direct violence, as from penetrating wounds and blows transmitted through the condyles of the jaws or through the vertebral column.

The temporal bone fractures in a rather typical manner so that we may distinguish three types as follows: (1) longitudinal fracture; (2) crossing fracture; (3) frac-

ture of tip of the pyramid. Each type has its characteristic course, symptoms and prognosis.

The longitudinal fracture typically extends from the tegmen tympani to the anterior surface of the pyramid and ends in the anterior or middle fossa. It is the most common fracture of the base of the skull alone without complication. It is much more frequent than diagnosed in life and even at postmortem, as the fracture may be found, at times, only on microscopic examination. It is typically a middle ear fracture and produces a middle ear type of hearing impairment. The diagnosis is often difficult, as the x-ray is usually negative and blood in the middle ear may occur without fracture. Spinal fluid from the ear is the only absolute sign.

Prognosis is not good because fractures of the petrous portion of the temporal bone do not heal well. Cases have been examined microscopically thirty years after injury with almost no callus or healing. This means we practically have a permanent communication from the middle ear to the meninges.

The crossing fracture starts in the posterior fossa, extends to the jugular bulb across the pyramid and ends there. It always destroys the roof of the vestibule because this is the weak spot. The cochlea and semi-circular canals may therefore escape injury, but are usually destroyed by the hemorrhage. If the lateral labyrinth wall is fractured, it is between the oval and round windows. This fracture is usually seen on x-ray.

The prognosis is bad because, as a rule, (1) this type is produced by severe injury, and (2) because the respiratory and cardiac centers lie in the post fossa. If the lateral labyrinth wall is ruptured, we have a direct communication from the middle ear into the inner ear. However, if this is not the case and the patient does not die in forty-eight hours from the fracture, the danger of late infection is not so great as in longitudinal fracture. As to hearing, deafness is complete and permanent and no irritability of vestibule is present.

Rupture of the tip of the pyramid is practically always part of the so-called ring fracture due to violence transmitted to the base of the vertebral column. This occurs in falling from a height and hitting on the feet or sacrum, and is part of a ring fracture of the base. As the vestibulum is not involved, there are no otologic symptoms, as a rule. Diagnosis of this fracture is usually made by the x-ray. The prognosis, being part of a ring fracture, is bad.

The diagnosis of the presence of these varied pathological processes in head injury cases with ear symptoms, therefore, is of the utmost importance in estimating the disability. While time does not permit a detailed discussion of the varied symptomatology, the diagnostic points we may briefly summarize, as follows:

SUMMARY

Concussion of the brain with ear symptoms is characterized pathologically by degenerative changes in the vestibular nuclei. The chief symptom is dizziness, which is not continual but intermittent in attacks and without apparent reason. The caloric tests reveal normal irritability of the labyrinth, or, relatively often, hyper-irritability. Spontaneous nystagmus may be present, but not intensive and not continual. There are no cochlear symptoms.

Concussion of the brain, combined with concussion of the inner ear, is characterized pathologically by otitis vasomotoria, producing a picture of serous otitis interna, but, of course, with absence of bacteria. Depending on the location and amount of exudation, we have clinically a varied picture which may be grouped under four types:

Type 1—Exudate in the perilymphatic spaces only, producing middle ear type of deafness with no labyrinth symptoms.

Type 2—A middle ear deafness with spontaneous labyrinth symptoms of nystagmus and dizziness.

Type 3—Middle and inner ear deafness, with spontaneous labyrinth symptoms, no caloric irritability but positive turning reaction.

Type 4—Middle and inner ear deafness, spontaneous labyrinth symptoms, no caloric and no turning irritability.

In temporal bone fracture, we have three types:

1—Longitudinal or middle ear type, fair or good hearing remaining, with great danger from late infection.

2—The crossing or inner ear type, with deafness and little danger of late infection.

3—The type of ring fracture, with no otologic symptoms.

The differential diagnosis between these organic lesions and the various functional neuroses and malingering, requires keen observation, as well as judgment in evaluating the symptoms present. Benese calls attention to the vasomotor instability in neurotic patients giving responses similar to organic lesions. In these cases we are aided by the observations of Kerrison, Dench, Leider, Loewy, Alexander and oth-

ers, on the frequent hyper-irritability of the cochlea, which rapidly fatigues, the hyper-irritability and profuse visceral reactions produced by labyrinth stimulation, which are not present in organic lesions, and, being reflex or objective, cannot be perfectly simulated by the malingerer.

In conclusion, I wish to call attention to the slight tendencies of fractures of the temporal bone to heal, with consequent menace to the patient's life from infection. In concussion of the brain, with or without fracture, we frequently have permanent pathological processes set up; namely, praestatic blood circulation, which produces a chain of symptoms greatly affecting the patient's ability to continue in gainful occupation.

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A PLEA FOR MORE GENERAL POST-OPERATIVE USE OF THE DUODENAL TUBE.

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Experimental workers and surgeons have been devoting much thought and investigation to the duodenum and upper jejunum in the intoxications brought about by intestinal stasis and obstruction, from whatever cause.

The experimental work of Draper¹, Whipple, Stone and Bernheim², MacCallum and associates³, Haden and Orr⁴, and McCann⁵ shows the duodenum to be the toxic zone in intestinal obstruction, whether adynamic or mechanical in nature.

As to the character of the toxins, the experimenters have not all agreed, but as to the location of their production there is quite uniform agreement—that it is in the duodenum and upper jejunum.

Many leading surgeons have recognized this "segment of toxicity" of Whipple's and have undertaken to meet the issue by doing an entero-enterostomy in anterior gastro-enterostomy and all other operations tending to produce stasis in the duodenum. They have also advocated jejunostomy drainage in intestinal obstruction, resections, peritonitis, and other cases in which there is likely to be intestinal stasis, toxemia, and gaseous distention.

In the more serious cases, at the time of the original operation, or at some time later, as circumstances demanded, they have done jejunostomy, suturing a tube in place, doing direct drainage of the loop. In the milder cases they have resorted to the repeated use of the stomach tube.

We now venture to suggest that the condition can be met in both the mild and severe cases by continuous stomach drainage with the duodenal tube. Five years experience with it in the treatment of postoperative abdominal complications has furnished us convincing proof of its great value and ever increasing range of application.

We are more confirmed in our belief that these toxins, formed in the duodenum and jejunum, are constantly regurgitated into the stomach. The character of the fluid withdrawn from the stomach and the rapidity with which it reforms, would strongly indicate that the great bulk of it was regurgitated; also, the fact that some of the most profound toxic cases of peritonitis and intestinal obstruction in which early dissolution was imminent, have been relieved of their vomiting, distention, and toxemia by stomach drainage, and have lived in comparative comfort for a week. This is probably all that a surgical drainage of jejunum could have accomplished. In other words, these cases have not died from the early formation of toxins in the "toxic loop," but have finally died of a toxemia produced by the dissolution of the tissues at the site of pathology.

This is well illustrated in the case of a woman, fifty years of age, operated upon for intestinal obstruction. When the peritoneum was opened the intestines were found to be very dark, greatly distended, and free pus from the peritoneal cavity poured out over the sides of the wound. She was so toxic and had such rapid pulse that it was not considered worth while to

undertake any exploration, so we hurried to get her off the table. The duodenal tube was passed before she left the operating room, and an enormous quantity of foul-smelling, dark fluid was removed from the stomach, and the tube left in place. For the first twenty-four hours she drained a large amount of fluid of the same character, her distention subsided, and her general condition improved. Her symptoms were so relieved by the second or third day that we could hardly believe what we had seen. Drainage was continued, and she lived seven days without further distention or vomiting. Postmortem showed that her pelvis and the lower part of the abdomen were full of pus, and much of the intestine was practically gangrenous. In this instance it relieved the emergency and kept her alive until she died from a pathological source far removed from the duodenum.

That the relief afforded with the tube is so decided that it may be misleading as to the progress of the pathology is illustrated by the case of a boy, eight years of age, who had a traumatic rupture of the small intestine, which was sutured within a few hours after the accident. Drainage of the peritoneal cavity was established and later, when distention and vomiting began, the use of the duodenal tube was instituted. It was removed after a few hours, but the child begged to have it reinserted. His symptoms of distention and vomiting were so completely relieved that the symptoms of mechanical obstruction were overlooked. Postmortem showed that agglutination of loops at the site of the trauma had caused a mechanical obstruction, and local gangrene had finally ensued.

There are many postoperative abdominal cases, where the local pathology has not progressed far enough to endanger life, from which the patient would recover if he could be relieved of the early toxemia from the duodenal loop caused by intestinal stasis.

The duodenal tube gives the gravely ill patient, who is fighting two antagonists (his local pathology and his duodenal toxemia), relief from the toxemia, thereby leaving his entire forces free to fight the pathology.

In cases of perforated appendicitis with a greater or less amount of peritonitis, in conjunction with Fowler's position, Murphy's drip, and Ochsner's massive, hot applications, it is the treatment *par excellence*, and it is in this class of cases that it saves the most lives, as they are the most common. We are firmly convinced that it,

and it alone, has saved life in these desperate conditions.

In the less frequent cases of mechanical intestinal obstruction, it relieves the toxemia, stops the vomiting, and certainly gives the patient every opportunity to overcome the effects of the obstruction after operation.

Many times, in operations on the stomach and intestines, in order to prevent distention and vomiting, we insert the tube before the patient leaves the operating table.

A patient now in the hospital, who has had two previous operations and each time vomited for three days, was, this last time, given the duodenal tube before she left the operating table. She didn't vomit that day, but vomited a small amount twice during the night. The tube was removed the following morning, she became nauseated and insisted upon its return, and then wouldn't give it up until the third day, as she stated that it had been such a relief to her that she didn't mind the annoyance of its presence.

In all stomach operation, such as resections, ulcers, and gastro-enterostomies, we pass the tube before the patient leaves the table and leave it in place for from twenty-four to forty-eight hours. In these cases the stomach is kept empty by aspiration and frequent washings with sterile water.

More recently, we are inclined to pass the tube and aspirate the fluid contents of the stomach before the operation is begun.

The large quantity of fluid present at operation, in a twelve-hour fasting stomach, is always surprising. In a recent case—a resection of an ulcer, and gastro-enterostomy—we withdrew a pint and a half of dark-looking fluid before the patient left the table.

Many times in cases of obstruction and peritonitis we have been able to withdraw a quart of fluid from the stomach, although the patient was constantly vomiting. In other words, vomiting does not mean that the stomach has been emptied of either fluids or gas. In fact, we have inserted the tube and been able to hear the escaping gas all over the room, although the patient had just been vomiting.

In cases of difficult abdominal hernias, or other hernias, where we wish to guard our suture line from the effects of vomiting, we pass the tube on the table and leave it in place until the period of vomiting is over. If the patient is sufficiently out of the anesthetic to swallow, there is usually very little trouble in passing the tube.

When inserting the tube at the end of operation before the patient is sufficiently awake to swallow, and because of the dryness of the throat, we find vaseline a more satisfactory lubricant than the lighter oils, as it is more adherent to the tube. Also, in these cases where the patient is still asleep, we never inject any water until we have withdrawn stomach contents, which assures us that the tube is not in the air passages, nor curled up in the esophagus. In either case, injecting water might be of serious consequence.

We find that we are using the tube more often in all kinds of abdominal operations where there is any undue distention or vomiting. The relief is frequently so marked, and the patient is given so much comfort, that he begs to have the tube returned if he once experiences a few hours drainage.

Dr. James T. Case, of Battle Creek, cured a serious case of duodenal fistula with constant duodenal tube drainage after all other known remedies had failed.

By making possible duodenal feeding and the introduction of fluids, it gave remarkable results in one case following carbolic acid poisoning, where there was constant vomiting. It might also be used in other forms of corrosive poisoning, under like circumstances.

After the use of five per cent cocaine on an applicator, we pass the tube through the nose now always because it is less irritating to the throat, cannot be bitten, and is not in the way during an anesthetic. It should be passed to the first mark only as it will curl up in the stomach if too much is inserted, and therefore may not empty the stomach of either fluid or gas. The medium size Levine tube, number 14, seems to be the most satisfactory for general use.

The longest we have ever left the tube in place was seven days. It sometimes becomes irritating to the throat and nose, under which circumstances it may be removed and re-inserted later.

Ordinarily it is left hanging by the side of the bed, the patient is given an abundance of water to drink and the water is allowed to siphon off. After improvement ensues and it appears that the patient would retain the water, the tube is hung up on the head of the bed to stop siphonage. It should be let down again and the stomach aspirated immediately if nausea occurs.

The tube accomplishes the following:

1. It relieves conditions due to gas and regurgitated intestinal fluids. It is a vent pipe.
2. It effects interrupted or continuous lavage of the stomach, and, in some

cases, of the duodenum. 3. It gives relief from nausea. 4. It makes possible the free drinking of water and thereby relieves that most distressing symptom, thirst. 5. It permits transgastric feeding. 6. It relieves toxemia. 7. It is a port of entry for all kinds of medication. 8. It improves the feelings of the patients; they often beg for its return after they have once experienced the relief afforded by its use.

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PYELITIS OF PREGNANCY With Report of Cases

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Infection of the renal pelvis is a much more frequent complication of pregnancy and the puerperium than is generally supposed. The symptoms presented frequently simulate other acute inflammatory conditions of the abdomen and chest, giving rise to numerous errors in diagnosis.

In 1893, Reblaub (*Congres. franc. de chirurgie, proces. verb.*, Paris, 6:692) reported several cases and thus brought the subject before the profession. In 1905, Opitz, (*Ztschr. f. Geburtsh. u. Gyn.*, 1905) presented a very complete review of the subject.

ETIOLOGY

A great deal of discussion has arisen as to the causation of this condition. Some investigators contend that it is due to the pressure of the pregnant uterus on the ureter, where it crosses the pelvic brim. Others are equally certain that it is caused by elongation of the ureters with kinking and torsion. Halbertsma has shown by experiments on dogs that a weight of 5 grams compressing the ureter over a surface of 8 millimeters is sufficient to prevent the flow

of a volume of urine weighing 400 grams. He is a protagonist of the first theory. On the other hand, De Lee asserts that, as the specific gravity of the pregnant uterus is about the same as that of the intestinal mass, pressure of the pregnant uterus on the ureter is not the cause of ureteral obstruction in this condition.

Be it as it may, the underlying cause of renal infection in pregnancy is obstruction of the ureter, with resulting renal stasis forming a breeding ground for bacteria.

PATHOLOGY

On account of the low mortality of this condition, the material is comparatively scanty. In cases examined and reported in literature, the ureter was found to be dilated and elongated, the walls thinned out and the mucous membrane hyperemic. In some cases, there was marked elongation of the ureter with a mobile kidney, producing a decided kinking. In a few cases this kinking was so pronounced that, even after pregnancy was terminated, the urine was unable to pass. The renal pelvis was enlarged, sometimes markedly, with walls thickened and sclerosed and covered with a thick purulent debris or a white tenacious exudate. The kidney substance was pale and anemic, with, in some cases, a marked atrophy of the renal substance. (Williamson, *Kidney Diseases*, Herringham, 1912.)

BACTERIOLOGY

The principal offenders in these cases are the various members of the coliform group. The infection is nearly always hematogenous, in all probability gaining entrance to the circulation through some small lesion of the alimentary canal.

Cabot and Crabtree assert that in the beginning of pyelitis or pylonephritis, due to *B. coli*, the bacteria can be demonstrated in the blood stream. Even in cases where the infection may have taken place along the course of the lumen of the ureter, owing to an incompetent uretero-vesical valve, or from lymphatic extension, they were able to recover the bacilli from the circulation, causing them seriously to doubt the occurrence of renal infection without the intervention of the blood stream.

The greatest number of cases of renal infection occur before the fifth and the sixth month of gestation. During this period the gravid uterus is rising out of the pelvis, resting upon the brim thereof and compressing the ureter between it and the brim.

SYMPTOMS

The great variety of symptoms presented in the onset and subsequent course of the

disease, are responsible in a great measure for the errors of diagnosis in this condition.

Williamson (Herringham, *Kidney Diseases*, 1912) divides the initial symptoms into six groups, as follows:

1. The earliest symptom is often slight intermittent pain over the loin, probably due to distention of the renal pelvis. This is usually followed by malaise, headache, pallor, constipation and slight irregular rise of temperature, corresponding to the blocking of the ureter and retention of pus in the renal pelvis. The tongue is coated and sweats are fairly common. There is some tenderness over the kidney region and a sense of discomfort in the loin.

2. The onset is sudden with acute lumbar pain, followed quickly by temperature and rising pulse, rigors, vomiting, headache, malaise and sweats.

3. The initial symptoms are high fever, malaise, etc., without any symptoms referable to the kidney.

4. Frequency, urgency and painful urination are the first to be noticed, followed in a longer or shorter interval by pain in the lumbar region and evidences of toxemia.

5. In rare cases, there is a sudden onset with abdominal pain, persistent vomiting, absolute constipation and distention.

6. Occasionally there are symptoms resembling those of pleurisy or pneumonia affecting the base of the lung. These are worse on respiration, particularly deep inspiration. Temperature and pulse rise, there is vomiting and hurried breathing.

About 60 per cent of the cases of pyelitis and pyelonephritis of pregnancy can be classified in Group 2.

Pain: This is the most striking symptom in nearly all cases. It is usually felt over the lumbar region, and varies from a dull ache to the agony suggestive of the passage of a stone. In the latter case, it may extend over a wide area, along the ureter to the front of the abdomen. When the pain is localized in the iliac fossa, it may give rise to a diagnosis of appendicitis. Ranging upward, it may simulate pleurisy and pneumonia. In rare cases, there may be pleuritic symptoms confirmed by the clinical findings, due to contiguous inflammation, or simultaneous infection.

But in the majority of cases the pain is felt in the region of the affected kidney or kidneys, if the condition is bilateral, extending towards the groin of the affected side. Occasionally, it is colicky in type.

Temperature: The next symptom of importance is the elevation of temperature. This is irregular, being sometimes contin-

uous, sometimes remittent and sometimes intermittent. When there is obstruction to the flow of purulent urine, there is usually a rapid rise in temperature, sometimes preceded by a chill, which usually subsides when the flow is reestablished. The pulse rate varies with the temperature. In the milder cases it ranges around 100, but in the severe it may go to 130 or more.

Vomiting: As in other forms of kidney irritation, an exacerbation of pain may be accompanied by vomiting. It may also precede the onset of the pain, even by a day or two.

Abdominal Distention: This is a very troublesome and distressing feature of the disease. When it is associated with persistent vomiting, it may lead to a diagnosis of intestinal obstruction.

Urinary Symptoms: Frequency, burning and urgency may be present, but in some cases are not nearly as noticeable as would be supposed judging by the amount of purulent urine passing through the bladder. As in all nephritic cases, the urine, at first, is high colored, scanty and of high specific gravity. It is very turbid and, on standing, deposits a heavy sediment. On microscopical examination, the field is found to be filled with bacteria, pus cells, varying in amount, epithelia, leucocytes and red cells. When the accompanying nephritis is pronounced, epithelial, hyaline and even granular casts may be present.

Blood Examination: It must be remembered that normally in pregnancy there is an increase in the white cells. This rarely runs above 10,000 per c. mm. In pyelonephritis there is usually a leucocytosis which is not very high considering the acuteness of the inflammatory process, running about 12,000 to 14,000 per c. mm. However, it must be borne in mind that the absence of a leucocytosis does not rule out the presence of pus in the kidney.

Physical Examination: In many cases there is distention of the abdomen with rigidity of the muscles of the affected side. Palpation of the kidney is difficult, but tenderness can usually be elicited by first percussion over the affected organ and palpation of the costo-vertebral angle. A point of great tenderness is often found around McBurney's point, giving rise to suspicions of appendicitis. Digital examination per vaginam will usually detect tenderness in the fornix where the ureter can be felt entering the bladder.

Cystoscopic examination with catheterization of the ureters, will definitely establish the diagnosis. The phthalein test will usually show that the efficiency of the af-

fectured kidney is lowered as evidenced by diminished excretion and increased appearance time.

DIAGNOSIS

The three principal symptoms encountered in pyelitis and pyelonephritis are pain, temperature and pus in the urine. Whenever a pregnant woman presents the first two, the physician should immediately look for the third. In addition, there are general malaise, furred tongue, frequency, painful micturition, constipation and irregular temperature, which is usually not very high. The sequence of events in acute appendicitis is to be remembered; viz., pain, nausea, vomiting and temperature. In renal infection of pregnancy, pain and temperature are present always, but nausea and vomiting are comparatively rare. In the latter the muscular rigidity of the abdomen is usually absent, or, if present, is not nearly so pronounced.

If there is the slightest doubt as to the diagnosis, a cystoscopic examination will give the most valuable information.

TREATMENT

The first essential of treatment is that of other inflammatory conditions, rest in bed. The patient should receive a purge of calomel, podophyllin, followed by a saline. Copious draughts of water should be given and even forced on the patient. In the treatment of the *B. coli* infection, various and sundry remedies have been advocated. Hexamethylenamin, combined with sodii phosphate, 2 to 3 grams daily, sometimes gives results. Oftentimes a change from an acid to an alkaline medication will be advantageous. Mercurochrome intravenously in from 10 to 25 c. c. of a 1 per cent solution, is advocated, but cannot be too long continued for fear of salivation. In addition, the injection is usually followed by an intense reaction which may frighten the patient and her friends. Caprokol in my hands has not given the slightest benefit in *B. coli* infections. In the two cases to be mentioned later, it seemed to me that the best results followed the use of salihexin intravenously. This is given every day until its effects begin to be apparent, then every second day. At times there is a reaction following its use, but it is usually mild.

In obstinate cases the insertion of a catheter to the pelvis of the kidney, and its retention there for several days, is the best remedy, providing, as it does, constant drainage of the diseased organ.

One of the most essential parts of the treatment is the diet. In the early stages,

when the symptoms are acute, the diet should be easily assimilated and non-irritating. In all acute infectious diseases the high temperature is often responsible for an increased tissue waste. Therefore, it stands to reason that the patient should receive as much, if not more, nourishment, in order that sufficient calories be taken to balance the output. For a woman weighing 130 pounds a diet should be arranged that will provide her with 2400 calories. This should include enough proteids to give a minimum of 70 to 80 grams daily. Milk, on account of its easy digestibility, would seem on first thought to be the ideal food, but it is subject to two objections; viz., used exclusively it gives too much proteid, or, if kept within bounds, it does not provide enough nourishment. One quart of milk will provide 640 calories, so that to get from 2400 to 3000 calories, four or five quarts of milk, containing 140 to 175 grams of proteid, will be given, which is entirely too much.

Inquiring into the relative caloric value of foods suitable for cases of pyelonephritis, it is found that cream, while containing a little more albumin than milk, has a high caloric value, sufficient to nourish the patient, and yet give her the minimum proteid requirement. One quart of 20 per cent cream contains 2200 calories, with less than 40 grams of albumin. Given in the form of cream soups, on cereals and bread, or combined with aerated waters, it is very palatable. Sugar, given in the form of cane or milk sugar, gives four calories to the gram. A diet containing two quarts of milk, to which has been added one ounce of milk sugar to each glassful, will provide 2280 calories. One slice of bread (100 calories), half an ounce of butter (100), cereal and cream (200), will furnish the balance of calories necessary.

As the patient improves, the diet can be increased. An egg or two can be added daily, in place of some of the milk. Later lean meat, chicken, etc., will give a pleasant addition to the bill of fare. In all forms of nephritis there is no objection to the free use of carbohydrates and fats, and during the period of proteid restriction they should be given freely. Salads with oil dressing, jellies, fruits cooked with sugar, etc., have a high caloric value, are free from proteid and may be given in acute nephritic conditions.

The following cases are reported, on account of the severity of the symptoms:

Mrs. R., 37, white, American, married, entered Hotel Dieu on April 30, 1926, at 4:30 a. m. for delivery, in the service of Dr. Branch Craige. On

admission, her temperature was 104, pulse 160 and respirations 24. Delivery took place at 7:30 a. m.

She gave a history of an attack of ear trouble one month before. She stated that Dr. W. J. Davis had operated on it and that it had discharged freely for some time after. During the month previous to confinement she had temperature off and on.

Urinalysis, made April 30, showed albumin, granular casts and epithelia, but no pus. The high temperature persisted. On May 5th, the white blood count was 13,400 with 83 per cent polymorphonuclears, and albumin, granular and hyaline casts, and pus were present. One week later, pus was still present and the temperature had ranged from 98 to 105.2 degrees. On May 17th, the white blood count had fallen to 10,200 with 74 per cent polymorphonuclears. Paratyphoid A and B and typhoid, were absent. The course of the disease was practically the same until May 24th, when I saw her first. Then temperature was 104; pulse, 110. Her appearance was that of a very sick woman. Face was sallow, tongue coated, abdomen quite distended, with marked tenderness over the right kidney region, following the ureter to the front of the abdomen. Catheterization of the ureters showed pus and epithelial cells from the right kidney. The urine from the left kidney was negative. Culture of the urine from the right side showed *B. coli*. The catheter was left in the right kidney pelvis, but was pulled out by the nurse next morning. The catheter was reinserted on the 27th, and left until June 1st. During that period the kidney pelvis was washed out daily with mercurochrome 1 per cent. The temperature, which had been 103 before inserting the catheter, dropped to 98 the next day and did not rise above 101.6 while it remained in place. She did fairly well until June 7th, when she began to complain of severe pain in lumbosacral region and along the course of the right sciatic nerve, the slightest movement bringing on paroxysms of pain.

From June 12th intravenous injections of mercurochrome were given every second day for four doses, but had to be stopped as mercurial stomatitis was produced. During the administration of the mercurochrome, the temperature was as erratic as ever. On June 22nd, the intravenous injection of salihexin was begun. Twelve doses were given, two days apart. The temperature gradually receded, the pus slowly disappeared, the appetite improved and, with it, the general strength. On July 17th, the patient was discharged. The sciatic pain took quite a long time to disappear, and even yet she walks with a slight limp.

Mrs. R., 24, Mexican, mother of one child and pregnant five months with second, was admitted to the City and County Hospital on July 6, 1926. On admittance, temperature was 99; pulse, 100; respiration, 26.

She complained of great pain in right kidney region and right iliac fossa, frequency and burning on micturition.

She was a pale, sallow, emaciated woman, evidently in great distress.

There was marked tenderness over the right kidney on first percussion and in the right costovertebral angle on palpation. No enlargement of the kidney could be made out. Temperature was irregular, varying from 99 to 105 and accompanied by chills and sweats.

Catheterization of the ureters showed pus from the right side which gave culture of *B. coli*. There was no appearance of phthalein from either side, in fifteen minutes. This was probably due to the nurse refusing to give water under the idea that she was going to receive another anesthetic. The catheter was left in twenty-four hours and tem-

perature fell rapidly, but soared when catheter was removed. On the 17th, it was reinserted and left for five days and the kidney pelvis was washed daily with mercurochrome 1 per cent. She was given an ampule of salihexin daily for fourteen doses. Discharged July 23rd.

These two cases are similar in the irregular temperature, which sometimes reached 105, the pain over the kidney region and in the iliac fossa. But in one case there was no frequency, unless urination every three hours or so under forced administration of fluids can be called such. In the latter, the frequency was as much as every fifteen minutes.

SUMMARY

Temperature or abdominal pain in a pregnant woman should at once lead to an examination of the urine. But it should be borne in mind that it should be a catheterized specimen from the bladder, as the vaginal discharge, always present, may mislead.

In obstinate cases, drainage of the kidney pelvis for days at a time and washing out the pelvis daily, will give the best of results.

Special attention must be paid to the diet, that an already weakened kidney may not be overloaded and yet the patient receive the necessary nutriment.

Internal medication is best given intravenously.

THE EFFECT OF THE MENSTRUAL CYCLE ON BASAL METABOLISM.

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1926.

This paper is written with the intention of reviewing the literature on the subject of the effect of the menstrual cycle on basal metabolism and to report in detail two cases which seem to vary somewhat from the general impression obtained from the literature. While the literature on the subject of the relation between the ovary and thyroid is voluminous; on the other hand, the literature of this particular phase of the subject is most extremely scarce.

A request from two abstracting services resulted in three references on this subject—all abstracts of articles from foreign journals—and one other reference to two American authors who have tried to approach this subject by studying the sugar metabolism during the menstrual cycle. According to them, after making 300 blood sugar determinations covering forty-nine menstrual periods in twenty-six normal

women, there seems to be no ground for conclusion that there is a constant cyclic variation in the fasting blood-sugar level. The average values observed during menstruation are slightly higher than those for the intermenstrual period. However, there are a great number not only of higher values, but also of lower values, during the menstrual period, than at any other time. The ingestion of 1.75 gm. of glucose per kilo of body weight has, however, led, in ten cases observed, not only to smaller initial increases in blood sugar, but also to a greater degree of secondary hypoglycemia during the menstrual period than at any other time of the month. The effect noted immediately before and immediately after this time is just the opposite, that is, a lessened tolerance, while the ingestion of glucose in the intermenstrual period has an intermediate effect. This smaller increase and greater decrease in blood-sugar following glucose ingestion during menstruation, suggests an altered functioning of the pancreas, coincident with the time of menstruation. Speculation as to whether or not this is the result of an altered ovarian or suprarenal secretion seems hardly justified by the evidence at hand. The only conclusion is that, in making single determinations of blood sugar for purposes of clinical diagnosis, the time of the menstrual period should, in as far as possible, be avoided.

Wiltshire, of London, undertook a series of experiments comparing the physiologic processes in the menstrual and intermenstrual periods. The points chosen for determination were: (1) the basal metabolic rate of normal women during menstruation and between menstrual periods; (2) the cost to the organism of a certain definite piece of work; and (3) the rate of recovery from that work. The observations were made on five subjects, the basal metabolism being determined each day during the menstrual periods and three or four times between these periods. The results obtained showed that the basal metabolism was not appreciably affected by menstruation. The cost of work to the organism and the rate of recovery from work, were the same during the menstrual and intermenstrual periods. The author concludes that, while more experiments must be done before any definite conclusions can be drawn, the processes appear to be identical during the menstrual and intermenstrual periods.

The German investigator, Lanz, has noted that basal metabolism increased towards the end of the interval and during

the premenstruum, and attained its lowest point during the postmenstruum and at the outset of the interval.

The course assumed by curves thus recorded is declared to correspond to that of the curve of development of the corpus luteum, a fact which is said to indicate that impulses which govern variations proceed from the latter. These impulses are described as slight in healthy individuals, and as pronounced in sufferers from certain diseases (tuberculosis in the initial stage, for example), particularly when accompanied by disturbances of internal secretions.

The two cases reported in detail are as follows:

CASE 1. L. B., school teacher; aged 30; first examined, August, 1921. Chief complaint, weakness. History: The patient has been nervous and weak for ten years. Weakness has been accompanied by rapid pulse, nervousness, pains and aches in the lower limbs. Four years ago, she had scarlet fever; has been much worse and unable to work ever since. Nervousness and rapid pulse and pains in lower limbs have been becoming worse all the time. A year and a half ago, she had a severe cold, coughed some, but raised no sputum. Had slight temperature, 99 to 99.2, which existed for a year. Spent several months in a tuberculosis sanitarium, although told by a very excellent chest specialist that she did not have pulmonary tuberculosis. Previous illness: mumps and influenza. Menstrual history began at 12; regular duration 4 days; profuse. Some months there were severe pains and, other months, no pains at all. Family history: Father and mother living, two brothers living. Father has high blood-pressure; no history of tuberculosis in family.

Physical examination: Patient is a moderately developed, poorly nourished female, about 30 years of age, who does not seem very ill; no external manifestations of nervousness. Teeth look good and x-ray shows no infection. Tonsils are small and buried, but contain some infection; tongue not coated. No exophthalmos; von Graefe's and Stellwag's signs both absent. Thyroid is palpable and uniformly enlarged, but enlargement is not detectable by inspection. Lungs are negative to both physical and x-ray examination. Pulse, bounding; rate, 120. Heart action, heaving and forcible; apex is one finger's breadth inside the mammary line both sounds are present, snapping and brittle; no murmurs; capillary pulse easily detected. Abdomen retracted, no tenderness; right kidney palpable; knee jerks and Achilles' reflexes, all present and equal. Eyes react quickly to light and accommodation. There is marked tremor of fingers of both hands. Basal metabolism, plus 27. Urine and blood examinations, all within normal limits. Kidney function, first hour 50 per cent; second hour, 20 per cent. Provocative Wassermann, negative. Spinal fluid: no increase in pressure; cell count, 2; no excessive protein; colloidal gold and Wassermann tests, both negative. This was before the introduction of iodine-therapy by Plummer. This patient showed no response to rest and bromides, nor to ovarian and corpus luteum therapy.

April 10, 1922, thyroidectomy was performed under nitrous oxide-oxygen-novocain anesthesia; and two-thirds of left lobe and four-fifths of right one, removed. Patient made a good recovery and left the hospital in one week. After operation, pains and aches in legs were completely relieved, nervousness very much better; pulse rate decreased some except

under nervous excitement. But extreme weakness still persisted, and was always very much worse during menstrual period. December, 1922, basal metabolism was plus 14. Patient recovered sufficiently to do relief teaching during school year 1923-24. As symptoms were always aggravated during menstrual period, an artificial menopause was induced by x-ray during 1924. During the school year 1924-25, patient did not miss a day from teaching during the entire year. In June, 1925, basal metabolism was minus 14, and February, 1926, minus 12. This patient seems to be gradually recovering although progress is very slow at times.

CASE 2. S. M. C., female, aged 36; entered hospital Dec. 10, 1925. Had just finished menstruating; feeling badly since November menstruation. Chief complaint: feeling of weakness; pain in chest; rapid pulse; and palpitation of heart, especially noticeable on going to bed at night.

Physical examination: Patient is a small, moderately developed, well nourished female; weight, 120 pounds. Head is negative; tonsils are small, cryptic, buried, and contain cheesy material. Teeth are artificial; tongue is clear; thyroid gland is not palpable; lungs are normal both to physical and x-ray examination. Heart; apex is one finger's breadth inside mammary line; no enlargement; bounding and forcible; rate is 120 to 130; both sounds are present and snapping; no murmurs; capillary pulse plainly visible. Abdomen is negative; no tremor of the fingers. Patient does not think she is nervous. Dec. 17, 1925, basal metabolism was plus 43; patient did not care to go to bed. Lugol's solution was given, 10 minims three times a day for two weeks. She feels much better and symptoms have practically disappeared except that pulse rate continues around 100, and she has noticed loss of weight. Menstruated, January 6th, much more easily than in December. January 14th, had a severe attack of palpitation of heart at bedtime and collapsed; pulse went to 140. Basal metabolism on January 29th, plus 11. In spite of this reduction of 25 in the metabolism rate, patient did not feel any better and pulse continued 100 to 120. She menstruated February 6, and had very severe cramps and pains in back lasting 36 hours; suffered more than ever. Basal metabolism, February 13, plus 25. At this time we debated between surgery and x-ray treatment. Decided on x-ray and to x-ray ovaries first, not with intention of suppressing menses completely, but to reduce it. Two x-ray treatments were given ovaries, February 14 and March 4, respectively. The patient felt much better after these treatments and seemed much improved; pulse came down to 80. These x-ray treatments were the only thing which gave any relief from her symptoms during her entire period of illness, up to time of operation, except during first month when Lugol's solution relieved her, although Lugol's solution reduced metabolism every time it was given. But when the March menstrual period approached, symptoms recurred again. March 8, basal metabolism was plus 54. She had pains in breasts and felt like menstruating but no cramps and no flow until March 15th. Patient has been taking Lugol's solution, 15 minims, three times a day, continuously. She is unable to take larger doses on account of gastro-intestinal symptoms. Basal metabolism, March 23, plus 42. During this time, although basal metabolism has varied within a wide range, symptoms have been gradually becoming worse.

At this time the patient left the hospital and went to another city where she remained for four months, during which time she did not receive any iodine and had a tonsillectomy performed. She returned to hospital July 19th. Physical examination at this time showed loss in weight of 32 pounds.

Patient is extremely nervous; has marked tremor of fingers of both hands. Pulse rate is 120. Examination of heart shows no enlargement; no murmurs; beat is bounding and both sounds are sharp and brittle. Blood-pressure is 100-80; no exophthalmos; von Graefe's and Stellwag's signs, both negative. Tongue is trembling, slightly coated. Left lobe of thyroid is palpable, which may be due to loss of fat in this region; no bruit present. Abdomen, distended; patient has been alternating between diarrhea and constipation; succussion sound very marked over upper abdomen. Patient is extremely nervous and is continually moving both upper and lower limbs. There is marked mental depression at times. She sleeps very little. Blood count still normal. Basal metabolism, plus 60. She has not menstruated since March. Lugol's solution was given again, 20 minims, three times a day. Basal metabolism, August 2, plus 36; August 13, plus 33; August 19, plus 33. Sugar tolerance test at this time showed a curve at its highest point, .2 per cent at the end of two hours. August 20, thyroidectomy was performed under nitrous oxide-oxygen-novocain anesthesia. When thyroid was exposed, both lobes were enlarged about twice their normal size. Three-fourths of each lobe, along with isthmus was removed. Uneventful recovery from operation followed. Lugol's solution, 10 minims once daily was given for eight weeks. Basal metabolism, September 3, plus 18; October 30, plus 7. All symptoms have subsided with the exception of some abdominal discomfort which is still persistent. Pulse rate is 70 to 80. Patient has gained 15 pounds since operation. Pathological sections of both these thyroid glands shows marked and extensive hyperplasia of epithelium lining the acini. Diagnosis, toxic goiter in both cases.

Summarizing these two cases briefly: Case 1 represents a slow chronic course of a toxic goiter in which, at first examination, the basal metabolism was plus 27. After the removal of almost the entire gland, the basal metabolism was still plus 14 with some of the symptoms still persisting. Improvement was at a stand-still six months after the operation, and continued so until the artificial menopause was induced by x-ray of the ovaries, which, in turn, reduced the basal metabolism to a minus 14, and has resulted in further very marked improvement in this patient's condition.

Case 2 represents an acute fulminating course of a toxic goiter, in which the basal metabolic curve is directly opposite to the curve arrived at by Lanz. He stated that the curve increases toward the end of the interval and during the premenstruum, and attained its lowest point during the postmenstruum and at the outset of the interval. While, in this case, the curve was always lowest at the outset of the premenstruum and toward the end of the menstrual cycle, and at the outset of the interval the curve was at its highest. On the other hand case 2 might be called a simple case of acute hyperthyroidism with symptoms very much aggravated during the menstrual cycle.

Boothby has concluded, after a great number of basal metabolism determinations made in women with and without thyroid disturbances, that the average during the menstrual cycle and during the interval is of negligent significance.

After a study of the hyperactivity of other endocrine glands, Hoppe bases his treatment of hyperthyroidism with corpus luteum, on the theory that the condition is caused by a defective secretion of the interstitial sex glands; that the hormones of the interstitial sex glands have an inhibitory and regulatory action on the secretion of the thyroid; that, when the function of these interstitial sex glands is deficient, there is a lack of physiological inhibition of the thyroid, with an excessive secretion, and therefore, hyperthyroidism. In other words, hyperthyroidism and hypo-ovarianism are synonymous conditions.

These contentions are directly opposite, also, to the conditions in case 1, where the hyperthyroid symptoms and the abnormal basal metabolic rate continued until a hypo-ovarianism was induced by x-ray therapy. In accordance with the contention of Hoppe, a great number of clinicians have used corpus luteum in the treatment of hyperthyroid conditions. But, upon reviewing their reports, we find that their cases, while having symptoms of hyperthyroidism, had basal metabolic rates which were either within or only slightly without the normal range. Therefore, it must be inferred that these cases were really cases of hypo-ovarianism with symptoms similar to the hyperthyroid state.

In contrast to most of the above investigations and in accordance with these two histories, Soiland says that, in many of their cases of x-ray therapy of the thyroid gland, they have found it impossible to obtain a decrease in the basal metabolism without x-raying the ovaries also. In fact, this circumstance has occurred so frequently that, if they fail to obtain a reduction in the basal metabolic rate as soon as x-ray treatment is instituted, they almost routinely x-ray the ovaries at the same time.

In conclusion: Judging from the above observations, an inverse factor must contribute to the cause of some cases of hyperthyroidism. The results of treatment have not reached the one hundred per cent mark, as is evidenced by still existing controversy between the radiologist and the surgeon. Possibly more attention to the ovarian function will aid in raising this average of cures.

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ETIOLOGY, DIAGNOSIS AND TREATMENT OF URETERAL STONE*

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The cause, prevention, diagnosis, and removal of urinary calculi have always interested the medical profession. Hippocrates suggested as an explanation of the formation of calculi, the ingestion of certain muddy waters, and emphasized the possibility of the accompanying inflammation being etiologic rather than the result of the stone. The accounts of the skill of the pre-anesthetic barber surgeons in cutting for stone in the bladder comprise some of the most dramatic incidents of our early surgical history. Yet, not until 1882 was the first ureterolithotomy performed, by Bardenhauer, and not until 1888 was the technique of the operation developed and described, by Tuffier. In 1909, only 172 cases had been recorded in the literature. Following this, a great deal of experimental investigation has been undertaken in an endeavor to learn the cause of the formation of such stones. The problem, however, remains unsolved, although the investigation has revealed many interesting findings and refuted some long-cherished beliefs. Great advances have been made in the diagnosis of such cases by the use of the roentgen ray in conjunction with the ureteral catheter and the making of ureterograms.

Most calculi contain oxalates, urates, phosphates, and calcium in various proportions. The constant presence of a calculus, once it is formed, testifies to the almost

complete insolubility in urine of these chemical constituents. There is evidently some substance in urine that, under normal conditions, keeps these chemicals in solution, for, in twenty-four hours, an average of 0.78 grams of uric acid, 0.015 grams of oxalic acid, 2.5 grams of phosphoric acid, and 0.25 grams of calcium are eliminated. This property of urine to hold chemicals in solution in greater amounts than is possible in water, is ascribed by most physiologic chemists to protective colloids. It is conceivable that, through faulty metabolism or as a result of the excessive ingestion of such materials in the food, too large amounts of these chemicals might reach the kidneys for the protective colloids to hold in solution. This idea has led to the age-old teaching that hard water derived from lime soil has a tendency to cause the formation of stone. Keyser, in a recent investigation at the Mayo Clinic, administered massive doses of calcium oxalate, chlorid, lactate, and phosphate to laboratory animals, and necropsy showed negative results. He concluded that the giving of lime salts in massive doses does not cause visible increase in the crystalline content of rabbits' urine and that the increased ingestion of calcium salts will not lead to significant increase of calcium in the urine.

A geographic study based on the incidence of urinary lithiasis in various parts of the world, bears this out. Urinary calculi are common in certain lime-stone areas, but in countries such as Canton Province in China the incidence is even larger and lime-stone is not an abundant constituent of the soil.

If the foregoing findings are correct, then the time-honored practice of advising patients with urinary calculi to drink only distilled water is without foundation in either experimental or pharmacologic findings. If patients follow such advice, usually they do not drink enough water, as distilled water is not readily accessible. As a result, the urine is much more concentrated than if they were permitted to drink the water undistilled. The concentrated urine gives greater opportunity for the precipitation of the crystalline contents, thus favoring the formation of stone. If such precipitation is due to a deficiency of the colloid content of the urine, it seems reasonable to suppose that bacterial infection might be the cause of the deficiency. Certainly the frequent presence of such infection in association with lithiasis can be interpreted as the cause rather than the result of stone formation, as has been shown experimentally by Rosenow and Meisser. They devital-

ized a dog's tooth, injected the root canal with organisms that were obtained from the tooth of a patient with renal lithiasis, and these organisms, when injected into rabbits, showed a specific localizing tendency for the kidney. Obviously, however, following single or even multiple intravenous injections, a chronic focus was not produced and calculus formation could hardly be expected. But by filling the root canals of the devitalized teeth with bacteria such a chronic focus was produced and, in the course of several weeks, roentgen rays revealed shadows in areas of the dog's kidney where formerly there had been none. At necropsy multiple renal stones were found.

Many observers have believed that anatomic changes are responsible for the formation of stone. Hunner believes that ureteral stricture is the primary cause and that the stone, so frequently found above the stricture, is a secondary occurrence. Bugbee has called attention to the frequency of renal stone in association with renal ptosis; and all are familiar with the frequency of stone in conjunction with prostatic hypertrophy. There can be no doubt that urinary stasis furnishes favorable environment for the occurrence of stone; but other factors are necessary. In the case of ureteral stone, the history of the colic produced by its migration from the renal pelvis to a point of lodgment in the ureter, would seem ample proof of its extra-ureteral origin, the stricture being due usually to ulceration and inflammation incident to the lodgment of the stone in the ureter.

Braasch, in reviewing the cases observed at the Mayo Clinic, pointed out that recurrence took place in less than 10 per cent of cases after removal of the stone at operation, when fluoroscopy or later reray had failed to reveal the overlooked fragments. Braasch and Carman adapted the bedside roentgen-ray unit developed during the war, for use in the operating room. With this procedure the surgeon is aided in finding small calculi, and when the operation is completed, but before the kidney is returned to its fossa, a fluoroscopic examination shows whether or not fragments are left that might serve as foci for the formation of new stone.

The fact that stones rarely develop in the remaining kidney following their removal from the other, Braasch believes is an indication that patients go through a stone-forming cycle which may last for several years. The condition seems to be due to an infection that upsets, for the time, protective colloid mechanisms. For this rea-

son it seems important to emphasize the desirability of removing all possible foci for renal infection. The invariable presence of such foci in these cases adds weight to the theory of their etiologic role. Yet, if the theory is in error, no criticism can be attached to the removal of an abscessed tooth or a tonsil containing pus, since both, in themselves, are a menace to health.

As knowledge of the cause of stone has progressed, so has that of diagnosis and treatment. The advent of the Bucky diaphragm in roentgen-ray technic made it possible to detect accurately even the most insignificant shadows, and ureterography makes their localization simple. Formerly we depended on the wax-tipped and lead catheter to aid in doubtful cases, but we now rarely employ either. The wax tip frequently may not be scratched, and the lead catheter may appear to lie in apposition to the suspected shadow on a two-dimension plate when in reality it is several centimeters anterior, or it may appear several centimeters away from the shadow of the stone and thus seem to exclude it when, in a greatly dilated ureter, it is on the opposite wall from the stone. With the injection of an opaque medium, preferably 12 per cent sodium iodid, the inclusion of the shadow within the ureteral outline makes its intraureteral position almost certain, while a dilated ureter at the stone or above leaves no doubt. Occasionally the stone will not permit the passage of the medium, in which case the ureter is outlined only as far as the stone.

The diagnosis having been made, the method of removing the stone becomes pertinent. Formerly ureteral stones were invariably removed by operation, and if the stone is greater than 1 cm. in diameter this is still the method of choice, as it is if stones are known to have remained at one point in the ureter for a long time so that they have become imbedded in the wall.

If the patient gives a history of recent colic and there is evidence of recent migration, manipulation cystoscopically will usually be successful. In the case of stones that have descended close to or into the wall of the bladder, manipulation is probably the procedure of choice. The removal of a small calculus deep in the bony pelvis under the bladder, offers extreme difficulties in the surgical technic, and better results are obtained by manipulation. Crowell reports removing eighty-eight stones in a series of ninety-eight cases, and Bugbee in a series of 347 used the bladder route successfully in 326.

The technical methods employed in the

removal of stones by manipulation, vary with the operator. Lewis is pioneer in this field of surgery, and his ingeniously devised ureteral dilator is still employed by many urologists. For some years chemicals were thought to be of considerable aid and various antispasmodics, especially papaverin, were popular. Today urologists seem to agree that the two essentials to success are dilatation of the ureter and shifting of the axis of the stone.

The first essential can be accomplished by the use of a dilator, or by passing increasingly large catheters or sounds up the ureter past the stone, or by passing several catheters at the same time. It often happens that the narrowing of the ureter in the wall of the bladder and its resistance to dilatation not only prevents the passage of stones, but offers the greatest barrier to their removal cystoscopically. Frequently a ureteral orifice will hardly permit of the passage of a No. 4 catheter, and most painstaking dilatation will not enlarge it beyond a No. 10 or No. 12.

Since the chance of successfully removing the stone depends principally on the number of catheters that can be passed around it, inability to enlarge the orifice may result in failure to remove the stone. To overcome this difficulty I designed a pair of small rigid scissors that could be attached to a filiform for the purpose of cutting the ureteral meatus. The filiform is passed up the ureter as a catheter would be, and the scissors are then attached and guided by the filiform into the ureter to the desired distance. They are then opened and the upper blade, being double edged, cuts the upper wall of the ureter as they are withdrawn. If further cutting is necessary it may be done by the scissor action. By this method the ureteral orifice is made sufficiently large to admit readily from four to six No. 5 ureteral catheters; these are then passed by the stone and on the removal of the cystoscope are each twisted individually and then en masse so that the stone, becoming enmeshed in them, is usually withdrawn at the first attempt. If this fails, the procedure is repeated until it is successful. My only failures have been when it was impossible to pass the filiform by the stone. After removal of the stone, two catheters are left in the ureter to insure adequate drainage in case the trauma incident to the stone's removal should result in ureteral obstruction. If manipulation is not successful, one should be prepared to institute operative proceedings for removal of the stone at any time, since, if trauma has occurred, periureteritis with

complete obstruction of the ureter and ascending infection, may result. It is desirable to follow an expectant course of treatment in the hope that the stone will pass as a result of the manipulation, and if there is urinary drainage, this may be done safely. However, if complete obstruction has occurred, watchful waiting may prove disastrous and it should always be remembered that the mortality from ureterolithotomy is almost nil. In a series of 640 cases at the Mayo Clinic, reported by Scholl and Bumpus, there were but four operative deaths (0.62 per cent). There were no deaths following uncomplicated ureterolithotomy. In the four cases in which death occurred either other surgical procedures, such as appendectomy, were also carried out or other diseases of the urinary tract were partly responsible.

If ureteral lithotomy is not performed, ascending infection and ureteral obstruction rapidly result in sepsis of the kidney, so graphically described by Beer. With such a complication, immediate nephrectomy is obligatory and, if it is not performed, the retained toxic products of urinary retention and bacterial action produce such extreme toxemia as rapidly to impair the function of the remaining kidney, and, if treatment is not instituted, will result in complete anuria and death.

Formerly it was our custom to allow the multiple catheters to remain in the ureter forty-eight hours and, on their withdrawal, await the passage of the stone which might occur at the next voiding or during the following ten days. This necessitated constant vigilance on the part of the patient and nurses to see that the stone was not overlooked in the voided urine. Frequently it was believed to be lost at the time of defecation, and further roentgenograms would be required to prove this. In such cases the successful removal of the stone became a matter of debate and conjecture. To overcome these annoyances and to be able to show the patient the stone at the time of cutting the ureterial orifice, I have, in the last series of cases, removed the catheters immediately after their insertion and the manipulation, and have repeated the procedure until the stone was delivered.

The healing of the ureteral orifice in the cases I have examined subsequently, usually resulted in a somewhat larger ureteral meatus, but one that functioned in preventing regurgitation. This was also Braasch's finding in a series of experiments on dogs some years ago. In one case in which the patient recently returned to the Clinic this

was not true and regurgitation occurred with a clinical manifestation of slight pain in the side during micturition. The stone in this case had been present for many months prior to its removal, and the unfortunate final results may have been influenced by the ureteral dilatation produced by the long period of partial obstruction.

Bleeding, if excessive, can be controlled by fulguration of the bleeding points, but this is seldom necessary, as there are no large vessels in this situation.

THE X-RAY SHADOWS OF SECONDARY INFECTION IN LUNG TUBERCULOSIS

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On account of the physical conditions in the lungs, their radiologic densities are susceptible of finer analysis than are those of any other part of the body. Further, nothing in this field is of more interest and value than the differentiation, whenever possible, of lesions caused by tuberculosis from those produced by other infections.

It is well recognized that there are no pathognomonic physical signs of lung tuberculosis; however, radiologists believe that their particular contribution to the physical examination of the chest, when skilfully interpreted, will more accurately indicate the nature of a lesion, as well as its location and extent, than will any other part of that examination. Since the criteria which the clinician accepts in physical findings as suggesting tuberculosis and those which point the radiologist to this conclusion are based on the same fundamental anatomy and pathology, there should be no antagonism. The radiologist must always remember that his contribution to the physical examination is supplementary, even on those occasions when the supplement, like a woman's postscript, furnishes the real meat of the examination.

The fundamental investigations of Miller and Dunham, many years ago, regarding the architectural structure of the lung, the method of invasion by tubercle bacilli and the pathology produced, pointed the way to our subsequent observations that tuberculous infection and infection by other bacterial invaders produce different kinds of shadows in the lung field. If we will base our interpretations upon the fundamental investigations of Miller and Dunham, to which there have been no material additions, we will be in position to differentiate

etiological factors with a reasonable degree of certainty. It is our belief that wherever we have departed from the fundamentals mentioned and interpreted shadows as tuberculosis, without proper regard for the underlying pathology which must produce such densities, we have been out on the thin ice of conjecture and have too often been wrong in our conclusions.

We know that tuberculosis invades lung tissue through the lymph channels; therefore, that the infection first surrounds the lobules, because the lymphatic vessels enclose each anatomical lung unit very much as a fish-net holds its contents. The smallest visible tuberculous lesion, therefore, is the dim outline of a secondary lobule, with its congested lymphatics and beginning granulomatous consolidation. Such a lesion is essentially parenchymatous, and, since the lung parenchyma fills all the space between the hilus and the pleura, the tuberculous density may occur anywhere in this lung field. The lesion has a definite relation to the bronchial tree, and this relation can be traced by the striation densities which mark the blood vessels accompanying the bronchi. In instantaneous films, with the very finest detail, we can make out the extremely delicate net-like shadows surrounding the involved lobule within which is an area of increased radiopacity. On the usual film, there is only a blurring or haziness, more or less sharply delimited from the surrounding tissue, being roughly triangular at the lung periphery, though with varying shapes when located more deeply within the lung. Usually, when a patient comes for radiography, the tuberculosis is extensive; however, if not complicated by mixed infection, even a conglomerate shadow will show a simple multiplication of the characteristic lobular density. The loss of this type of shadow, or the obscuring of it by atypical densities with bizarre formation, is, in itself, good evidence of a complicating secondary infection.

In addition to its definite character, the tuberculous density is, for all practical purposes, an upper lobe shadow. Without discussing the reasons for this, it is a fairly safe rule that tuberculosis does not invade the basal regions until the local or general resistance has been lowered by some accompanying infection.

Therefore, in differentiating lung shadows, with reference to their etiology, we have two fairly safe guides; one is its location of the density; the other is its structural peculiarity. Pyogenic infections

of the lung are mucogenous, as a rule, and invade along the bronchial mucosa, spreading from within the structural units, so that, when developed to the stage of visibility, they are relatively more radiopaque than are tuberculous shadows. Of course, after a consolidation is well established, the shadow will be the same whether the invasion is from the periphery through the lymphatics or from the center, as in pyogenic infections. However, it is very seldom that we find isolated tuberculous consolidations, without adjoining lesions presenting the typical characteristics of early tuberculosis. Tuberculous consolidations, when uncomplicated, usually spread by continuity and coalesce, while those of other infections are more likely to be discrete, even when quite numerous. Miliary tuberculosis, of course, is an exception.

When pyogenic or influenzal infections occur in the tuberculous lung, their shadows do not differ materially from similar densities in the non-tuberculous lung. In the hitherto normal lung, such infections are prone to involve the basal or hilus regions, so that accentuation of the hilus densities, or discrete densities in the hilus region, or discrete or irregular densities in the base, should be interpreted as probably non-tuberculous. When the same type of shadow occurs in a non-tuberculous lung, they should again be interpreted as probably non-tuberculous. If we have a cavity in the upper lobe of one lung and it becomes secondarily infected, we will soon find, in the parenchymatous tissue surrounding this cavity, shadows which, if found elsewhere in the lung, we should undoubtedly regard as the densities of non-tuberculous lesions. It is just as reasonable to interpret them as lesions produced by secondary invaders of the cavity as it is to regard them as tuberculous densities. In many cases an analytical interpretation is not possible, because a tuberculous caseating area soon becomes secondarily infected, and areas of secondary infection frequently become tuberculous, so that the shadows become so interwoven that the best we can say is that the method of extension and possibly the character of isolated densities suggest the influence of secondary infection complicating the tuberculosis.

Many of these densities which we attribute to non-tuberculous infection resolve and disappear. It may be said here that the only controversial point in this paper is whether a true tuberculous lesion, after developing to the stage of visibility on the x-ray film, will entirely resolve, leaving no trace of its shadow. It is our belief that

a tuberculous area, or any other granuloma, will not entirely heal by resolution, but there will always be some degree of cicatrization with resulting fibrous tissue visible on the radiograph; and conversely, that densities which do entirely resolve and disappear were not granulomata, but were simpler and less organized consolidations. We do not think that Gardner's report of the resolution of tuberculous lesions in experimental animals covers the point, so far as the radiopaque densities in human lung tuberculosis are concerned. The toxic reaction which occurs around all recent tuberculous foci and which is shown on the x-ray film as a nebulous density extending beyond the central area of greater opacity, will subside and the tuberculous shadow become correspondingly smaller, but there will always be some trace of it, if the cellular components of the granuloma are once organized.

In studying lung densities, we regard as presumptively non-tuberculous, the following:

(1) Any abnormal shadows confined to the basal region alone, whether due to an accentuation of the bronchial tree ramifications, or whether they are entirely isolated; whether discrete or conglomerate; whether recent or old, unless they present the typical characteristics of tuberculous infection which we do not recall ever having seen in the lung base. We realize that this interpretation will occasionally be in error, but not very often.

(2) Markedly accentuated hilus densities, or isolated densities near the hilus but lying apart from it. In the adult, the source of error here is not great, if we take care to differentiate the old linear striation and beading of healed tuberculosis from recently formed densities. In the infant and child, however, it is practically impossible to differentiate the shadows of hilus tuberculosis, slowly spreading along the main lymph channels, from the shadows of a low-grade bronchopneumonia such as we find following whooping-cough or measles. The chief differential point in such cases is the observation of resolution and disappearance of well established densities, which we regard as establishing their non-tuberculous nature for all practical purposes.

(3) Discrete, rounded or irregular densities lying apart from the shadows of an evidently tuberculous area and without any visible relation to the bronchial tree involved in the manifest tuberculosis. Here the chances of error, of course, are great and the conclusions, as previously stated,

should be only general, as it may be impossible to pick out any given shadow as the density of secondary infection. However, the general character of the density and the method of extension are often very suggestive.

The practical value of differentiating, whenever possible, the shadows of tuberculosis from those of a complicating infection, should be obvious. For example, a rapidly advancing unilateral lesion, if tuberculous, probably would require different management from one which is due to a secondary infection. Or a mixed infection spreading out from a lung cavity, or an abscess distributing pyogenic infection through a tuberculous lung, require different treatment from that demanded by a pure tuberculosis.

Aside from these factors of practical value to the clinician, it is expected of the radiologist that he will go as far as possible in the study and interpretation of types of pathology examined by him, and nowhere in the body can this analysis of pathology be carried so far as in the study of lung shadows.

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LOCALIZATION OF BACTERIA IN THE LUNG APICES

(Review of Literature)

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The question of the localization of bacteria—especially the tubercle bacilli—in the lungs, is one that has long interested me. I believe that upon the understanding of this question depends very largely the solution of the tuberculosis problem.

The premise of Dr. W. W. Watkins' paper, that disease in the apices is likely to be tuberculous whereas that in the bases is probably non-tuberculous, is eminently correct as the vast amount of literature on the subject bespeaks. Primary tuberculosis of the bases of the lungs does occur, however, and should be kept in mind as a possibility. Likewise, apical infection may be the result of other bacteria than the tubercle bacilli.

Laennec,² the father of auscultation, wrote:

I would, therefore, beg to call the attention of the

practitioner to the successive development of the tubercles in the different parts of the lungs. They begin to show themselves, in the first place, almost always in the top of the upper lobes, more particularly in the right; and it is in these points, especially in the last mentioned, that we most commonly meet with the tuberculous excavations of vast size. It is by no means uncommon to meet with cavities of this kind, in the situation just named, when the rest of the lungs are quite sound and do not contain a single tubercle; but, in this class of cases, the patient, during life, has frequently exhibited no signs of phthisis, or only equivocal ones, and has died of some other disease. It is much more common, however, to find one single excavation and several crude tubercles, in a pretty advanced state, in the summit of the lungs; and the remainder of these organs, although still crepitous, and in other respects sound, crowded with innumerable tubercles of the miliary kind, extremely small, semi-transparent, and hardly any of them with yellow specks in the center. It is evident that these miliary tubercles are productions of a much later date than those which had given rise to excavation. As well from the result of my dissections as from observations of the sick, I am well assured that this secondary crop of tubercles appears about the time when the first set begins to be softened. Very commonly we observe in the same lung evident marks of two or three successive eruptions of tubercles. Almost always, in these cases, we find that the most ancient of those which occupy the summit of the lung, have already reached the stage of excavation; the second crop, situated around and rather below these, has already become yellow, or at least, the greater part of them, but still of no great size; that the third eruption composed of crude miliary tubercles, with some yellow points in their centre, is situated still lower; and, finally, that the bases and inferior edge of the lung exhibit the most recent formation of all, consisting of miliary tubercles quite transparent. Exceptions to the order of development just described are by no means common. It is extremely rare for excavations to be first developed in the middle or base of the lungs; it is excessively rare to find the first eruption so numerous as to prove fatal.

H. R. M. Landis³ makes the dogmatic statement that the limitation of the physical signs to the bases of the lungs excludes tuberculosis of the lungs, but that lower-lobe involvement may follow apical infection.

William Stokes⁴ said that, if the signs of disease of the lungs are generally and equally distributed throughout the lungs, the existence of tubercles in those lungs is improbable.

P. Kidd⁵ states that other investigators found basal tuberculosis far less common than primary apical; he had two cases of primary basal tuberculosis in 412 autopsies of tuberculous individuals.

J. K. Fowler⁶ believed that the apices of the lower lobes were susceptible to tuberculous infection next in turn to the lung apices.

F. H. McCrudden⁷ says tuberculosis is to be differentiated from post-influenzal chronic pneumonitis by the absence of localization in the upper lobes in the influenza condition. He found a chronic pneumonitis following influenza, which endured for four years; the lungs had diffuse involvement which was demonstrated by both physical examination and roentgen picture.

G. Toppich⁸ calls attention to non-tuberculous apical broncho-pneumonias.

O. H. Stansfield⁹ reports the study of the lung findings in twelve cases of influenza; the involvement was most commonly in the right lower lobe, but might be anywhere throughout the lungs.

B. P. Stivelman and H. Hennell¹⁰ report two cases of chronic pulmonary miliary tuberculosis in which

the tubercles were demonstrated to be profusely distributed throughout the lungs.

E. L. Opie¹¹ says that the tuberculosis of infancy resembles very closely the experimental tuberculosis of animals; the chronic tuberculosis of the adult differs from the tuberculosis of children and from the experimental tuberculosis of animals.

William S. Middleton¹² reports four cases of definite pulmonary tuberculosis with the findings entirely basal in three of the cases; the fourth case had a very slight infiltration of the apices. He says that these cases are exceptions to the rule and that discussions of the improbability of tuberculosis in the presence of demonstrable signs in the bases alone, are futile in the face of a characteristic clinical picture. The greatest care must, therefore, be exercised to eliminate a tuberculous etiology in basal as well as apical lesions.

From the preceding citations from the literature, it is evident that tuberculosis is far more common in the apices than in the bases of the adult lung. Other pulmonary infection, especially the acute, is likely to be diffuse, or, if localized, more in the bases than the apices. In children, however, tuberculous infection does not have a tendency to localize in the lung apices.

There have been numerous explanations offered as to why tubercle bacilli locate most commonly in the apices of the adult lung. In an article published in 1923, I¹³ reviewed the literature on the subject of apical tuberculosis and presented my own explanation of adult apical tuberculosis.

I now propose to review my own ideas, tersely, and to present the data now available on the subject.

My own idea has been that there is one factor in the adult which does not exist in the child, and which is the great factor in producing apical tuberculosis. I refer to the insult which the cervical and mediastinal and bronchial nodes of the adult have suffered because of the years of assault from bacteria and toxins which come by way of the cervical lymphatics. My conception is that lymph nodes are, in a sense, filters through which lymph, with its burden of waste, passes, and as time progresses they must suffer a diminution of function.

Chronic inflammation of any part causes, therein, swelling and a production of fibrous tissue; fibrous tissue tends to contract; in this way the nodes must become more or less obstructed. Time is the one factor to change the youth to an adult and the easily permeable lymph node to an obstructed node.

My assumption, further, is that the deep cervical lymphatics drain into and through the mediastinal nodes and that the mediastinal nodes anastomose with the bronchial nodes; the topmost bronchial nodes, those through which the lymph from the

lung apices filters, are the ones to suffer the greatest amount of damage. There may be exceptionally free anastomosis between the mediastinal and the upper bronchial nodes. Bacteria which pass the mediastinal and bronchial nodes, as well as bacteria which enter the body at any point and survive long enough, go into the blood stream and, thence, through the lungs, where they are prone to be taken up by the pulmonary tissue to be passed on to the bronchial nodes. In the event that the lymph stream of the lung apices is sufficiently slowed, some of the bacteria may stick in the lymph vessels of the apex and cause a lesion there. It seems possible, too, that bacteria from a lymph node might grow in the stagnant lymph of an obstructed vessel, and thus the parenchyma of the lung becomes involved by retrograde invasion of bacteria. The bacteria which find the proper oxygen tension and other suitable soil conditions will be the ones to proliferate where they stick. When the lymph stream becomes stagnant, an acid condition develops, and the amount of oxygen present is lessened. The tubercle bacilli must have just this sort of culture conditions. It is also true that other, for the most part slow-growing, organisms desire similar growing conditions and hence, the other bacteria growing faster than the tubercle bacilli may help to prepare the soil of the apices for the tubercle bacilli.

Another important point is that large numbers of bacteria getting into the body and reaching any particular spot may break down the resistance that would otherwise be impregnable. The tubercle bacilli may reach the apices of the lung in great numbers by way of the cervical mediastinal and bronchial nodes more commonly than by any other route.

The portals by which bacteria enter the body, it is fairly conclusively decided, are, in the main, the mouth and the nose. They may enter with the air, the food, the drink, the fingers, or in some other way. With the air they likely come in contact with the mucous membrane of the upper respiratory tract from where they may follow a course similar to that of bacteria entering in other ways than with the air. Those bacteria which get into the trachea and bronchi may yet come in contact with the mucous membrane and be carried by the cilia to the pharynx.

The residual air of the lungs is an important factor in causing bacteria to get entangled with the mucous membrane of the lower respiratory tract. Those which

reach the bronchioles and beyond may be passed, through the aid of phagocytes or otherwise, to the pulmonary lymphatics. If the bacteria reach the lymphatics in great numbers, especially at a place where the lymph circulation is stagnant and the growing conditions are suitable, a growth of the bacteria at that point is likely to result.

The bacteria which enter with food or drink, or in any other way, may be swallowed. They may pass the stomach, and find, perchance, a growing place in the alimentary tract, from which they go to the lymphatics, through the nodes to the blood stream and thence to the lungs to suffer a fate similar to that of bacteria reaching the lungs by way of the pulmonary artery blood stream.

Bacteria which find lodgment and favorable growing conditions about the mouth or nose, may proliferate to tremendous numbers; from them, quantities of bacteria pass by way of the cervical lymphatics and mediastinal nodes to the bronchial nodes, and on to the blood stream. Many of the bacteria linger long enough to damage the nodes. After reaching the blood stream they are at once returned to the lungs and to the bronchial nodes.

An important part of my explanation of bacterial localization is a favorable growing place near the portal of entrance to the body and then a more or less direct transmission of those bacteria to another place—the tracheo-bronchial nodes—suitable for their growth.

A survey of the literature shows that there has been a great deal of attention given recently to the question of the localization of bacteria in the lungs. The older literature has a considerable number of references on the question but, in the main, the problem was attacked from the standpoint of anatomical construction of the lungs and of the upper part of the chest. The general idea was that the constriction of the apices by the first rib, the relatively little movement and the dwarfed tortuous bronchial branches, produced a markedly slowed lymph circulation of the apices and, hence, offered bacteria a good chance to stick in the apical lymphatics. These explanations fit in with my theories.

Freund¹⁴ had the theory that the short and often ossified first costal cartilage caused the first rib to press unduly upon the apices.

A Wolff-Eisner¹⁵ reports 156 cases of calcified first rib. His conclusion is that there is no relationship between apical tuberculosis and a calcified first rib.

Birch-Hirshfield¹⁶ believed the stunted angular upper bronchi to be the chief factor in predisposing the tops of the lungs to tuberculous infection.

Schmorl¹⁷ thought the short fixed rib caused a

furrow across the upper lobes which gave the bronchi thereof their peculiar anatomical construction and that this reduced the vitality of the apices. Hart and Harass¹⁸ said the sternal end of the first rib being lower than the vertebra end causes compression of the apices; the shape of the vertebrae of the region may also be such as to infringe upon the apices; these factors interfere with ventilation and embarrass the blood and lymph flow. Bacmeister,¹⁹ Rothchild,²⁰ Martins,²¹ Tendloo,²² Keith,²³ Stiller,²⁴ Schiele,²⁵ and Pottenger,²⁶ are others who take the view that apical tuberculosis is caused indirectly by the peculiar shape of the upper aperture of the thorax. Pottenger adds that the lung of the child grows far out of proportion to the growth of the chest; especially is this true of the upper thorax where a relative flattening is taking place by virtue of the falling of the sternal ends of the upper ribs. This, he thinks, causes a squeezing of the lung tissue of the adult apices and serious interference with respiratory movement and the blood and lymph flow thereof. Fischberg²⁷ accepts all the argument in favor of slowed lymph and blood flow of the apices and deems it important but thinks there must be some other factors to explain the apical localization. Phillips²⁸ thinks the orthograde posture causes a relative anemia of the pulmonary apices and a consequent reduced immunity to tuberculosis.

C. T. Zeitschel²⁹ reports two cases of muscular atrophy and paralysis of shoulders. In both cases there was compression of the lung apices and a resultant lack of aeration; he thinks compression produced diminution of the lymph flow and, hence, a predisposition to apical tuberculosis.

J. Peiser³⁰ reports thirty children with primary foci of tuberculosis in the apices of the lungs. A large percentage of these children had narrow chests and, to the author, this was important in the cause of the lesions.

Joseph Walsh³¹ says, while it is extremely difficult for particles of foreign matter in the inspired air to reach the respiratory parenchyma, the possibility of the dust and bacteria reaching the apical alveolar tissue is greater than its getting elsewhere in the lungs on account of the naturally greater pressure or velocity of air upward, due to the greater suction of the more active alveoli, the straightness of the paravertebral bronchus and the failure of the heart beat interference in the upper lobe. The right lobe is larger than the left and the right bronchus is higher and larger and this gives the right upper lobe greater suction than the left upper; the right apex is the first to be inflated with inspiration and the last to be deflated in expiration. He is of the opinion that the explanation of the predilection of tuberculosis for the apices is that the lung parenchyma of the apices has greater functional activity than any other portion of the lungs. His opinion is based upon facts as: "the therapeutic action of rest, on the increasing development in size and number of hematogenous miliary tubercles from the base upward, the enlargement of the alveoli in emphysema and in normal lungs, with age, in the same direction, and on the fact that, while the inferior border of the lung fails to descend as low as nature would allow it, the apex is pushing upward through tissues designed to hold it."

H. Beitzke³² writing upon "Tendency of Apices to Chronic Tuberculous Infection," says the primary cause is the better aeration of the apices as compared with the bases. Another factor which may be operative is a local allergy of the apices. It is not a matter of distribution of bacteria for they are probably equally distributed to all parts of the lungs.

Von Zwahlenberg and Grabfield³³ opined that tuberculous infection goes direct from the cervical lymphatics to the pleura of the apices. Grober³⁴ injected india ink into the pharyngeal tissues and found the ink in the apical pleura.

Beitzke³⁵ and Most³⁶ say there can be no lymphatic connection between the cervical lymph nodes and the pleura of the apices.

D. Reinders³⁷ advances the conception that apical tuberculosis results from cervical lymphadenitis conveyed to the apex by adhesions, and says that good treatment of teeth, tonsils, and other mouth foci will help to prevent apical tuberculosis.

Shaw³⁸ found that, in a rabbit with one collapsed lung, tubercle bacilli, on being introduced into the blood, located invariably in the collapsed lung. This appears logical as the lymph spaces in a collapsed lung must become considerably narrowed.

Beitzke³⁹ believed that there is no connection between the cervical lymphatics and the bronchial nodes. Middleton⁴⁰ says uncritical are the writers who have attempted to show a relationship between cervical lymph-node infection and apical tuberculosis. It is his contention that there are no direct lymph or blood connections between the lymph nodes of the neck and the lung apices and, hence, there can be no connection between infection in the cervical nodes and in the lung apices.

J. Koch and W. Baumgarten⁴¹ believe that pulmonary involvement of tuberculosis occurs from a primary infection of the mouth and nose but that it comes about because the bacilli are carried by the lymphatics to the blood stream and then to the lungs; they assert that there is no connection between the deep cervical lymphatics and the tracheo-bronchial nodes.

Gary⁴² and Gerrish⁴³ books on anatomies say that the deep cervical lymphatics communicate with the mediastinal nodes and these in turn with tracheo-bronchial nodes.

Pfeiffer,⁴⁴ Grober,⁴⁵ Klebs,⁴⁶ Beckmann,⁴⁷ Wassermann,⁴⁸ Aufrecht,⁴⁹ Gordeler,⁵⁰ Grawitz,⁵¹ Behring,⁵² Thompson,⁵³ Pottenger,⁵⁴ Hildebrandt,⁵⁵ Buttersack,⁵⁶ and Weismeyer⁵⁷ believed that tubercle bacilli pass from the cervical lymphatics to the bronchial nodes. Most⁵⁸ has demonstrated, in man that there is a connection between the deep cervical lymphatics and the tracheo-bronchial nodes.

Rogers⁵⁹ has found that guinea pigs inhaling a spray of tuberculous sputum develop tubercles in the cervical mediastinal and tracheo-bronchial lymph nodes.

Allen K. Krause⁶⁰ says that tonsil tuberculosis is carried first to the deep cervical lymph nodes and thence to the mediastinal and tracheo-bronchial nodes.

S. L. Cummins⁶¹ says that Calmette and Uhl⁶² in 1913 succeeded in producing cervical adenitis and, in turn, tracheo-bronchial adenitis by infecting guinea pigs in the conjunctivae.

M. Ikeda⁶³ in a study of 661 patients, found the incidence of cervical node tuberculosis was greatest during ages from 15 to 30 and especially great at 20 to 22 years; the incidence of pulmonary involvement almost agreed with these figures.

L. B. Crow⁶⁴ reports that in 4,000 cases of manifest pulmonary tuberculosis he found that they all had enlarged hila and mediastinal lymph node enlargement; he says that in the cases where the infiltration is fairly heavy, a distinct chain of nodes extends from the upper portion of the space direct to the hilum region and, when the infiltration is slight, the narrow lines are seen like a strand of rope extending from the upper mediastinum to the hila.

In one of E. L. Opie's⁶⁵ autopsies, three small lesions were found at the right apex and the nodes at the bifurcation of the trachea were diseased. The left lung and its highest nodes were free of disease. This is more or less typical for all of his autopsy records.

He found in an autopsy on a colored woman with pulmonary tuberculosis, apical tuberculosis with cavity formation and tuberculosis of the peribronchial, peritracheal, and mediastinal lymph nodes.

J. Mendel⁶⁶ inoculated bovine tuberculosis into the milk teeth of two young monkeys and sealed up the cavities; local abscesses soon developed; the animals died of pulmonary tuberculosis and without macroscopic lymph node involvement.

H. J. Corper⁶⁷ found that a nasal instillation of a fluid suspension of human tubercle bacilli into dogs, during anesthesia, produced cavitation in the upper portion of the lungs of a dog.

W. Baumgarten⁶⁸ found that rabbits and guinea pigs infected by oral or conjunctival routes developed cervical adenitis and a secondary pulmonary tuberculosis.

Allen K. Krause⁶⁹ found that guinea pigs which had been infected, no matter at what point, with a non-virulent strain of tubercle bacilli, isolated in 1890 by Trudeau, exhibited gross tubercles of the tracheo-bronchial lymph nodes. In rabbits he says there is more probability of bacteria staying in the lungs, as the rabbits' lungs have a great amount of lymph tissue; bacteria enter the lungs in clumps and in large numbers; the lung lymphatics become congested with bacteria and incapable of carrying them to the nodes and, hence, many remain and set up lesions in the lung parenchyma.

Krause again writes that tuberculosis infection is more prominent in the tracheo-bronchial lymph nodes than in the pulmonary tissue. In rabbits, tuberculosis infection begins in the lymphatic channels of the pulmonary tissue about the bronchi, most commonly. Krause reasons that lymphatic channels which drain readily, pass the foreign material on to the nodes; but, after a time, there is an increase of lymphoid tissue along the channels so that greater or less obstruction of the channels results. In this way is determined whether the bacilli find lodgement in a lymph channel of the lung parenchyma or near the hilum or within a node.

Henry Stuart Willis⁷⁰ found that, when tubercle bacilli are injected into the skin of a guinea pig, within 24 hours they pass through the lymphatic vessels to lymph nodes five centimeters distant from the site of injection; at the end of four days they may have made a complete circuit of the body and found their way to the iliac, the tracheo-bronchial lymph nodes and to the spleen and lungs.

A. Puppe⁷¹ tied off the trachea and esophagus in rabbits and painted the mucous membrane of the mouth with tubercle bacilli. Within thirty-hours the bacilli had invaded the submental and sub-maxillary lymph nodes.

J. Koch and W. Baumgarten⁷² placed a droplet containing eight to ten thousand living virulent tubercle bacilli on the tongue or bucal mucosa of a guinea pig, without tuberculosis regularly resulting; but when they applied ten million of the same bacteria, positive infection consistently resulted; the cervical lymph nodes enlarged, sometimes greatly, and resembled scrofulous glands of children.

Warnecke⁷³ is of the opinion that frequent colds prepare the mucous membranes and the lymphatic system for invasion by the tubercle bacilli.

P. B. MacCready and S. J. Crowe,⁷⁴ in a study of 3260 patients in which tonsils and adenoids were removed, found fifty cases with tuberculosis of the nasal and pharyngeal lymphatic tissue; they comment on the marked frequency of cervical and mediastinal lymph node involvement in these cases and state that tuberculosis of the tonsils and adenoids is rarely recognizable from gross appearance.

W. V. Mullin,⁷⁵ in an examination of 400 pairs of tonsils found tubercle bacilli in seventeen of the pairs and states that there was no evidence, except

obtained from the microscope, that any of these tissues was tuberculous.

Allen K. Krause⁷⁶ says: "Buccal and pharyngeal irritation or infection has, as is commonly observable, a peculiarly intimate effect on the cervical lymph nodes. And once we reflect that these nodes adjoin and drain the two major portals of entry of tubercle bacilli, that they are the most frequent site of clinical tuberculosis in children, that for every case of manifest disease, there are certainly several times as many infections and that tuberculosis infection within them is markedly affected by any disturbance of their normal function, we begin to realize how much healthy mouths and throats may mean in the prevention of tuberculosis."

I. E. Less,⁷⁷ writing on x-ray studies of tuberculosis in infancy, says lymph node changes are the rule and come in the following order: the peritracheal nodes, the perihilar, and the peribronchial. The shadow of the upper mediastinum is characterized by smooth contour, even density, and unilateral position. Until later developments, it is not possible to differentiate the types of bacterial invasion.

J. P. Garrahan⁷⁸ found apical tuberculosis in children and adenopathy of the tracheo-bronchial lymph nodes.

Helen Eliasberg and W. Neuland⁷⁹ have found a type of pneumonitis in children which lasts for weeks or months and clears up except for enlarged hilum lymph nodes.

A. G. Schurlock⁸⁰ reports an infant dying of pulmonary tuberculosis in which the lesion, as shown at autopsy, was located in the upper part of the lower left lobe and the hilum lymph nodes draining this area were enlarged.

Anton Ghon⁸¹ is of the opinion that pulmonary infection in childhood is primary in the lung tissue and secondary in the regional lymph nodes.

H. Schade⁸² believes that "colds" injure the lymph nodes of the pharynx, trachea, and bronchi and open up the portals of entry for secondary infections.

Debre, Duhem and Petot⁸³ report non-tuberculous trachea-bronchial adenopathy shown by autopsy in two groups: the intertracheo-bronchial and the right antero-lateral-tracheal.

Wm. Snow Miller⁸⁴ believes that lymph nodes, and lymphatic tissue situated upon lymph vessels as they are, serve as centers for the gathering of germs and other matter conveyed there by phagocytes and play the part of filters interpolated in the lymph circulation. Miller is of the opinion that wherever tubercles are situated in a lung the site was one where there was lymphatic tissue. He found that there is a greater number of lymph nodes associated with the eparterial bronchus than with the bronchus which supplies the middle or lower lobe on the right side.

Sukennikow⁸⁵ found that the right upper lobe has more lymph nodes than have other lobes of the lung.

N. Neild⁸⁶ calls attention to the influence enlarged lymph nodes have, not only upon the lymph circulation, but upon the blood circulation as well. He comments upon the thin wall of the lymph vessel and the low pressure of the lymph stream.

V. Miulowski⁸⁷ comments on the frequency with which enlarged tracheo-bronchial lymph nodes are found in children.

J. Kottmaier⁸⁸ says enlarged bronchial lymph nodes have a serious retrograde effect upon the tissues of the lungs.

J. D. Lawson⁸⁹ presents a study of hilum nodes. He thinks enlarged hilum nodes are common even in youths. Associated therewith are often cough, recurrent colds, cervical adenitis, and changes in the corresponding lung. The changes in the lung seem to the author to be a cause rather than a result of the hilum adenopathy.

J. B. Hawes⁶⁰ in discussing hilum tuberculosis says concomitant findings are frequent coughs and colds, tonsillitis, adenoids and cervical adenopathy.

E. Bac⁶¹ says that, while the tubercle bacilli are usually considered as aerobic in character, there are many facts which indicate that they really are only relatively so. He says that when cultures are made direct from serous effusions and tuberculous organs and the proper acidity maintained, the tubercle bacilli multiply, always beneath the surface and often at the bottom of the tubes; inoculations of the blood of tuberculous guinea pigs or of triturated tuberculous organs into the liquid culture media, give colonies upon the submerged clots or parts of organs. Growth in the pellicle comes later and seems to depend upon an adaptation of the bacilli to aerobic conditions. Development of the bacilli is not arrested by a covering of oil or vaselin, or by driving the air from the culture media by boiling previous to inoculation. These bacilli grown beneath the surface retain their acid fastness, and vitality and virulence remains longer in them than in those of the surface growth.

Louise G. Robinovitch and George W. Stiles, Jr.,⁶² by a series of elaborate experiments, found an alkaline medium unfavorable and an acid medium favorable to the growth of tubercle bacilli.

J. Roux⁶³ calls attention to the fact that the blood and lymph are invariably acid in cases of tuberculosis.

SUMMARY

The evidence of the observations and experiments accumulated in the literature, indicates that the localization of the tuberculous infection in the apices of the adult lungs results from a combination of causes all tending toward an injury of the pulmonary lymphatics.

Bacteria may be inspired from the atmosphere into the alveoli of the lungs. From the lung parenchyma the bacteria pass to lymphatics of the lungs. If the organisms are of virulence and numbers enough to injure sufficiently the lymphatic tissues, they stick there and produce disease. In case the lymph structures in any areas of the lungs have previously been deteriorated by disease, the bacteria more readily gain a foothold there than elsewhere. Again, bacteria reaching any certain part of the lungs in greater concentration, or staying there with greater ease, than they do elsewhere in the lungs, would tend to set up disease in such a part of the lung. Walsh and Beitzke take the view that the short bronchi of the upper lobes and the lack of bony framework in the supra-clavicular portions, favor the ready passage of bacteria to the apices. The slow response of the supra-clavicular areas to expiration, holds the bacteria-laden air in these alveoli longer than they would be held elsewhere.

The longer and more tortuous the bronchi through which bacteria in air pass, the more the chance for the bacteria to become entangled in the bronchial cilia and be kept back from the alveoli. The bron-

chus is larger and less tortuous in the right upper lobe than in the left and this may account for the fact that tuberculous disease is more common in the right apex than in the left. The heart beat affects the lower portions of the lungs more than the apices and may be a factor hindering aspiration of particulate matter to the bases.

The compression of the first ribs upon the apices, as suggested by many writers, may cause under-inflation of many alveoli, and a consequent susceptibility to tuberculous infection. Shaw found a collapsed lung to be more susceptible to the blood stream bacteria than an inflated one. Collapsing of lung cells would certainly tend to narrow the lymphatics of the area, making them less pervious to bacteria.

Clumps of lymphatic cells on the lymph vessels serve as filters for the lymph; the larger the number of bacteria reaching these filters, the more likelihood of the vessels becoming clogged. If for any reason the lymph nodes draining the lymph of the apices are damaged, the lymph stream of these areas would be slowed and bacteria would likely stick in the lymph vessels of the parenchyma. Thus apical disease can become established.

The weight of the evidence is that anastomoses exist between the tracheo-bronchial and mediastinal nodes. Hence, bacteria and toxins from the cervical lymphatics have a chance to assail the bronchial nodes, the topmost nodes which drain the apices more than the lower ones.

The tonsils, adenoids, sinuses and abscessed teeth are excellent breeding places for bacteria. The cervical lymphatics and the topmost bronchial nodes are thus afforded excellent chances to gather immense quantities of bacteria. Some of these bacteria may well be tubercle bacilli as examination of the tonsils has conclusively shown.

The ordinary bacteria of the foci of the mouth, and head may be of low virulence but a continual assault from them may prepare in the apical tissue an acid and slightly anaerobic soil which is so necessary for the slow growing tubercle bacilli.

Upon this course of reasoning we must give close attention to the foci of infection about the mouth and nose, especially, as a prophylactic measure against tuberculosis.

Enlarged hilum lymph nodes occurring in the adult more than in the child, and upper nodes being affected more than the lower, would seem to be the most important of

many factors in producing apical tuberculosis in adults.

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FOUR CASE REPORTS

(Presented at the Staff Conference of the El Paso Masonic Hospital, El Paso, Texas).

CASE 1. ENCEPHALITIS

DR. J. M. RICHMOND

Man, age 20, brought in by ambulance, semiconscious, with rapidly developing coma. Temperature of 103; pupils equal and normal in reaction to light; neck is still and patient complains when neck is manipulated; chest is negative; abdomen is tender all over, patient not allowing the abdomen to be touched without moving the surgeon's hands; abdominal muscles are rigid; genitals normal without evidence of venereal disease; skin shows no scars or rashes; bones and joints show no pathology; breathing is stertorous; Babinski's and Koenig's signs present and patellar reflexes gone.

Father states that for two or three weeks past patient has been irritable, nervous, and complaining of intense headache, and that on the day of onset of disease he had told them that he had had no bowel movement for a week. That evening he had a convulsion. He works in a store, eats cheese and knick-knacks between meals and complains of lack of appetite at meals. He is habitually constipated. His

temperature had been up to 104 during this attack and prior to entrance to hospital he had been taking "fever medicine."

Family history negative for tuberculosis, cancer and chronic diseases of any kind.

Working diagnosis: Encephalitis.

Laboratory reports: Blood, Hbg. 90 to 100 per cent; white cells, 11,750, with 76 per cent polys. Widal negative. Urinalysis negative. Spinal fluid, pressure 45 reducing to 12 after withdrawal of 45 c.c. of fluid; the first 15 c.c. was clear and the last 15 c.c. slightly turbid; cell count on the first 15 c.c. was 150 and on the third 15 c.c. was 450; coagulation slight after one hour; the differential count showed 94 per cent small lymphocytes; Wassermann was negative; globulin positive; sugar increased.

The patient went into coma soon after entering hospital, continued to decline and expired on the fourth day.

Autopsy: On opening the cranial vault the dura was found somewhat congested, the vessels over the brain cortex showing marked congestion. The surface of the right temporal lobe was brown with numerous petechial hemorrhages beneath the pia. This condition extended for about 3 cm. over the lower surface of the right frontal lobe. The temporal lobe was very soft and the brain tissue about the consistency of thick pus. This softening did not extend to the ventricles. The base of the brain, including the surface of the cerebellum and pons were roughened, with plastic exudate. The meninges were held together by this exudate. The exudate is not firm enough to cause complete blocking of the spinal fluid.

Anatomical diagnosis: Encephalitis acute, right temporal lobe; plastic meningitis about the brain base.

Conclusions: The early symptoms in this case indicate the fairly rapid development of localized encephalitis. This was borne out at autopsy by the right temporal lobe findings. The encephalitis is of the hemorrhagic type which extends to the surface of the brain. The meningeal phase is obviously secondary to the encephalitis, and occurred after the brain infection reached the surface of the right temporal lobe.

CASE 2. CEREBRAL HEMORRHAGE

DR. E. J. CUMMINS

Blacksmith, 49 years old. On Nov. 28th, the patient, feeling apparently well, had dinner at noon, went to Juarez and drank one glass of beer. He was asked to take another when he remarked that he did not care for another, that he felt dizzy and had a terrific headache. He vomited, was brought home and put to bed and about 8 p. m. I saw him. He was complaining of headache, soreness in the neck and in the buttocks.

On examination he had some rigidity in the neck; his left eye turned out slightly, he was conscious and could talk. There was no hemiplegia; his pulse was 68; there was no odor about the breath; his reflexes at that time were normal; his blood pressure was 280-110. Blood urea showed 90 mgs. per 100 c.c.

Tentative diagnosis: Uremia.

Progress: On entrance into the hospital, patient was in a deep stupor; he would arise at intervals and go back into stupor. He still had a rigid neck, double Koenig, positive Babinski; exaggerated patellar reflex on the right side, negative Gordon and Oppenheim. Blood pressure was 280. Catheterized specimen of urine showed pus, blood and hyaline and granular casts. The patient was bled 36 ounces, his blood pressure dropping to 190. His stupor continued to grow deeper; Cheyne-Stokes respiration appeared and his temperature went to 106. The patient had convulsions every few minutes nearly all

day, respiration failed and the patient finally expired.

Partial Autopsy, Dr. Geo. Turner: The entire surface of the brain shows extreme congestion. Beneath the frontal and temporal lobes and extending around the pons are numerous free blood clots. The left frontal lobe is soft over its anterior portion. Sections through this area shows hemorrhage into the brain substance with destruction of the brain tissue for a diameter of 8 cm. The hemorrhage communicates with the left lateral ventricle filling the ventricles with free blood. There is no evidence of infection.

Diagnosis: Cerebral hemorrhage, left frontal lobe.

Conclusions: The motor area of the brain was relatively unaffected by the hemorrhage, even though it was very extensive, with large amount of brain tissue destroyed. The hemorrhage occurred so far toward the front of the cerebrum that motor nerve symptoms of apoplexy were not present. The patient was unconscious, from cerebrum destruction, but this, of course, is not pathognomonic.

CASE 3. CEREBRAL GUMMATA

DR. E. D. STRONG

The patient was brought into the hospital in a state of coma, having been picked up by strangers when he fell to the ground unconscious. He has not regained consciousness, and no past history obtainable.

Physical Findings: The patient is a man about sixty, in coma, pupils dilated; there is no rigidity of the neck; the breathing is stertorous. There are no rales in the chest; heart action is weak and the pulse is rapid. The abdomen is not rigid; tympanites is not present; the genitalia appear normal. There seems to be repression of urine. The skin is dry; cyanosis is present. There is no adenopathy.

Urinalysis: Specific gravity 1015, indican negative, small amount of blood, four plus albumen; moderate amount of mucus, occasional finely granular casts; negative for sugar; small amount of pus and small amount of epithelia. Blood Wassermann negative. Blood urea, 125 mgs. per 100 c.c.

Spinal Fluid: Appearance clear, cell count 3, globuline not increased, sugar not increased. Spinal Wassermann negative.

Autopsy, Dr. George Turner: The skull bone is rather thick and brittle; dura is firmly adherent to the skull bone; the valvarium has several rather deep erosions along the sagittal suture line; the dura is very thick and fibrous. On either side of the sagittal sinuses are patches of cauliflower-like gummatus growth which fit into the skull bone erosions. The entire cortex of the cerebrum is covered with grayish fibrosis in the arachnoid layer of the brain. There are small cortical hemorrhages, scattered here and there over the cerebrum; there is no blood outside the brain tissue and the ventricles contain no blood; there is a small hemorrhage in the substance of the right cerebellum; all hemorrhages, however, are superficial and very limited in extent.

Both pleural cavities present essentially the same picture, old fibrous adhesions firmly fix the lungs both posteriorly and laterally, adhesions about the right lung being more extensive than about the left; this lung is also fixed to the diaphragm. The pericardial cavity contains about 150 c.c. of serous fluid; pericardium is everywhere smooth, except over the anterior surface of the right ventricle there are patches of leukoplakia several centimeters in diameter; there is a rather thick layer of fat lying beneath the pericardium, practically all over the heart; there are small areas of leukoplakia scattered over the heart surface.

Both lungs show the same pathology; anthracosis is marked, but there is no evidence of pneumonia or tuberculosis.

Heart is considerably enlarged; the left ventricular wall is thickened and rather soft; there are no valve leaflet erosions; yellowish gray erosion is marked in the aorta and around the orifice of the coronary arteries; this arteritis also extends into the coronary arteries. Liver is light gray in color and the lower margin is distinctly rounded; it is contracted and the liver substance is very firm; the gall bladder contains no stones, though it is filled to distention and does not empty on compression. The stomach is rather high in the abdomen and shows no defects; the first portion of the duodenum is rather thick and fibrous though it showed no open lesion. Pancreas is rather firm. Spleen is about three times its normal size, very soft and friable; the lymphatics generally are enlarged. The small intestine and colon are negative except for chronic fibrous appendicitis. Left kidney is lobulated and the capsule peels easily. There are two cysts about 3 cm. in diameter occupying the anterior portion of the upper pole; there are smaller cysts scattered over the cortex; the kidney substance is congested, the glomeruli are prominent; the collecting tubules are filled with free blood. The right kidney presents the same picture except that it has a cyst about 10 cm. in diameter occupying and growing out of the upper pole.

Anatomical diagnosis: Fibrous meningitis with gummata. Acute nephritis with cystic kidneys. Atrophic cirrhosis of the liver, chronic aortitis, and myocarditis.

Conclusions: The interesting feature of this case is the wide spread manifestations of syphilis with no chronic manifestations of its activity and with negative blood and spinal fluid findings before death. This was of course an old syphilitic condition, which must have been actively treated over a period of many years.

CASE 4. BRAIN ABSCESS

DR. J. A. RAWLINGS

The patient is a well developed male child of five years. His parents are living and well, and his family history is negative for chronic diseases.

The child complains of headache in the right temporal region. He awakens at night complaining of pain. The onset of this attack was about three weeks ago. He is reported to have had Bell's paralysis, on the right side of the face about six weeks ago. He contends that he can not see when he covers his right eye. Dr. Irvin examined him following this statement about six weeks ago and reported better vision in the right eye than in the left, and found the throat, ears and nose clear at that time. There is no pain immediately over the mastoid, but the patient complains of pain above and below the mastoid region. His temperature ranges from 96.4 to 100.4. There is no rigidity of the neck. Reflexes are normal. There is slight internal strabismus in the right eye.

Past History: The child was normally delivered, and is a bottle fed baby. He has always been a strong healthy child. He had whooping cough and chickenpox in infancy. About a year ago he had scarlet fever which left him with a running ear. Occasionally this ear stops discharging, then shortly afterward he will begin to run a little temperature, and to complain of pain until the ear discharges again and the pain is temporarily relieved. This condition has obtained almost continuously for the past year. For the last few weeks he has been on codliver oil and other tonics in an effort to build him up. His tonsils were removed and found full of pus.

Examination: The patient is a perfectly healthy appearing, well developed child. The tonsils have been removed. There is no stiffness of the neck. There are no abdominal findings. No pathology is revealed anywhere except in the right temporal region where there is tenderness. The ears are not

discharging at this time. The right ear drum is red. Photophobia is present. The child is somewhat depressed but not enough to justify a diagnosis of brain abscess. His temperature is 100.8, pulse 120, and respiration 28.

Progress: The child was carefully observed for two days following entrance into the hospital; his general condition grew worse, the fever went higher and the child became more irritable. The leukocyte count increased from 22,950 to 31,000 with 94 per cent polys. within twenty-four hours, and it was decided to operate. The mastoid was explored and some pus encountered but not enough to justify the symptoms of the child. Effort was made to establish free drainage in the hope that pus in that vicinity might drain. Ebon formation of the bone was marked throughout the mastoid region. The immediate postoperative condition was good. The following day the drainage was very slight, the temperature went to 103, and the child complained of pain in the head. His pupils were dilated and he complained on being moved. The third day after operation the patient vomited undigested food; the drainage was somewhat freer; his stools became very offensive; he was rational, although the temperature went to 105; he voided freely. It was decided to open the lateral sinus, and this was done at 9 p. m. No pus was found in the lateral sinus. He reacted well, and did not vomit following the anaesthetic. The following day he became semiconscious, involuntary bowel movements began, and his temperature went to 105. He was rational at times and took some nourishment. Marked edema of the eyelids appeared. The pulse became weak, and respiration shallow.

Consultation with Drs. Brown, May, Vance and Rawlings was held. Dr. W. L. Brown said that no infected clot being found at the time of opening the lateral sinus, he advised against additional surgery; that he did not think a surgical abscess was present. His reasons for these conclusions were lack of vomiting, choked disc or slow pulse to indicate intracranial pressure; also he said the temperature and leukocyte count seemed to be too high for local abscess. He thought, with the mastoid history, the absence of any findings in the sinus and the absence of definite symptoms of cerebral abscess, that the child was developing basal meningitis. The Gradenigo syndrome, he said, pointed in the same direction.

The symptoms of meningitis developed rapidly, convulsions followed, and the patient expired.

Cranial Autopsy (Dr. George Turner): The dura mater is adherent to the skull bone and separates with some difficulty; the dural blood vessels are congested; the right hemisphere is slightly bulging over its anterior half and is quite soft to the touch. On opening the dura in the frontal area just to the right of the falx, yellowish grey pus, about the consistency of thick cream, pours from the incision. By continuing the dural incision and opening it on the right and left of the sagittal sinus, for its full length, pus pours from over the entire surface of the right hemisphere and from between the brain substance and falx cerebri. There is no pus over the left hemisphere or on the left side except around the base and about the anterior aspect of the subtemporal lobe. There is shallow suppuration over practically all of the cortical surface of the right cerebral hemisphere. The deepest area of suppuration, and likely the first involved portion of the cortex, extends from the base along the sylvian fissure and spreads over the temporal and frontal lobes. There are no deep abscess formations. The ventricles contain no pus. The mastoid cells on the right have been removed. The middle and internal ear cavities contain pus. The petrous portion of the temporal

bone shows no evidence of suppuration or that meningitis occurred by direct extension through the bone. The right superior petrosal, cavernous, inferior petrosal, circular and transverse sinuses, together with the same sinuses on the left, contain no blood but are filled with yellow creamy pus. The right lateral sinus contains nothing but blood while the left lateral contains antemortem clots.

The blood culture was sterile throughout. Smears from pus show many very small gram negative diplococci. Dr. Rawlings was of the opinion, from the first, that the child had an abscess in the silent area.

EL PASO NEWS ITEMS

DR. W. E. VANDEVERE has reopened an office for the practice of eye, ear, nose and throat, at his old location in the Mills building after a three months' sojourn in California.

DR. W. E. JOHNSON, formerly of El Paso, and now residing in Santa Barbara, California, is reported out of danger, after having suffered from a perinephritic abscess.

DR. O. F. MAY is seriously ill at this time in Masonic Hospital, suffering from lobar pneumonia.

DR. M. G. PADEN, local surgeon for the Southern Pacific, at Carrizozo, was a professional visitor to El Paso February 18th.

DR. F. O. BARRETT has returned from Tulane University, where he did post graduate work in pediatrics for two months.

DR. L. G. WITHERSPOON is again taking care of his practice after a month's illness in William Beaumont General Hospital.

DR. O. E. BROWN, Southern Pacific surgeon, at Tucumcari, was a professional visitor in El Paso, March 1st.

DR. W. B. COFFEY, of San Francisco, the newly appointed Chief Surgeon of the Southern Pacific lines, was the guest of Dr. R. L. Ramey, Division Surgeon of the Southern Pacific, February 20th.

There was a called meeting of the division, consulting and local surgeons of the three divisions of the railroad that operate out of El Paso, and about twenty-five of the surgeons were present. Dr. Coffey not only outlined plans and policy of the medical department for the future, but gave a wonderful address on angina pectoris. At the Vienna Clinic he worked out the operation of removal of the ganglion of the sympathetic nerve, as a relief for angina pectoris. His presentation was beautifully illustrated by lantern slides of the technic of the operation and the study of the sympathetic nervous system—a series of photographs that were the product of three years of research and dissections. His highly scientific presentation was most enthusiastically received.

DR. JOHN R. WALLS, formerly of Holbrook, Ariz., has moved to Winslow, where he will be located in practice, in the future.

DR. A. C. KINGSLEY, of Superior, Ariz., has moved to Phoenix and will be located there in the future.

DR. F. B. SHARPE, of Phoenix, has returned from a year's post-graduate work at Dr. De Lee's Lying-in Hospital in Chicago. He announces that his work will be confined to obstetrics in the future. He will be located at Nos. 723-24 Heard building.

DR. D. SCOTT SCHENCK, formerly of Safford, Ariz., has moved to Douglas, where he will be located in the future.

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THE APRIL AND MAY MEDICAL MEETINGS IN THE SOUTHWEST.

The months of April and May represent the period when the annual medical gatherings of Arizona, New Mexico, Texas and California occur.

On April 21st to 23rd the Arizona State Medical Association will hold forth in Yuma. This is the first attempt to hold the annual Association gathering outside of the six principal cities of the state, except the one visit to the Grand Canvon. That is, in itself, a nexcellent comment on the important developments which have taken place in Yuma Valley during the past few years. The program of the Yuma meeting, printed in full herein, is a guarantee of a profitable and successful meeting.

Immediately following the Arizona meeting, the Texas State Medical Association will convene in El Paso, beginning April 25th. The fact that the El Paso County Society will have charge of the local entertainment, and the usual high class program of the Texas organization, one of the largest and best in the country, will attract many visitors from Arizona and New Mexico.

Concurrently with the Texas gathering, the California annual meeting will be held in Los Angeles, starting April 25th.

The New Mexico Medical Society's convention will be in Carlsbad, May 9th, 10th and 11th. These dates have been chosen so that a continuous trip may be planned covering this meeting and the American Medical Association in Washington, which begins on May 16th. Full program of the New Mexico meeting will be found in the next issue (April) of this journal.

DINNER IN HONOR OF DR. WIN WYLIE

On March 15th, in commemoration of the fiftieth anniversary of his entering upon the practice of medicine, a dinner was tendered by members of the medical and legal professions of Maricopa County, to Dr. Win Wylie of Phoenix. The dinner was sponsored by Dr. D. F. Harbridge, secretary of the State Medical Association, and was attended by physicians, attorneys and their wives to the number of about one hundred and fifty.

Dinner was served by the Arizona Club. Dr. J. M. Greer, president of the Maricopa County Medical Society, introduced Dr. D. F. Harbridge, who served as toastmaster. Toasts in honor of Dr. Wylie were offered by Hon. F. C. Struckmeyer, Dr. E. Payne Palmer, Hon. P. H. Hayes, Dr. Geo. M. Brockway, Hon. Samuel White and Dr. John E. Bacon, the final response being made by Dr. Wylie. Music was interspersed between the toasts, and Dr. Brockway presented, in the name of the medical and legal fraternities of Phoenix, an engraved watch to Dr. Wylie, as a token of their respect and affection.

Physicians from over the state attending the dinner included Dr. and Mrs. C. E. Yount of Prescott, Dr. and Mrs. C. R. Swackhamer of Superior, Dr. F. C. Todt of Kingman, Dr. and Mrs. John E. Bacon of Miami. Many telegrams from other physicians, expressing their regret in not being able to be present, and offering their congratulations, were read by the toastmaster.

The closing toast, offered by Dr. Harbridge, was as follows:

"Here's to a man old in years, yet young in vitality and alertness. Here's to a man grown old in the experience of medicine and

law, yet young in its modernized practices. We salute you, Dr. Win Wylie, and may the years of the future be filled with that mellowness which comes to one conscious of having fulfilled with distinction his stewardship. God doubtless could have made a better doctor, but doubtless God never did."

DINNER FOR DR. W. B. COFFEY

On February 15th, on the occasion of the visit of Dr. Walter B. Coffey, of San Francisco, the newly appointed Chief Surgeon of the Southern Pacific Lines, to Phoenix, a dinner was held in his honor at the Arizona Club. This was arranged by Dr. George M. Brockway, District Surgeon, and was attended by the following local and consulting surgeons, in addition to Dr. Coffey and Dr. Brockway: Drs. Win Wylie of Phoenix, A. M. Tuthill of Phoenix, James E. Drane of Phoenix, D. F. Harbridge of Phoenix, Wm. A. Schwartz of Phoenix, W. O. Sweek of Phoenix, W. Warner Watkins of Phoenix, and J. O. Ollerton of Mesa.

Following the dinner, served in a private dining room at the Club, Dr. Coffey spoke very entertainingly about his plans for handling the industrial work of the Southern Pacific. He complimented the hospital and laboratory facilities in Phoenix and stated that the local and district surgeons would have more responsibility in the future than they had been allowed in the past. He stated that the welfare of the injured workman was to be paramount in all cases handled, and cases that could be handled more satisfactorily by local surgeons would be left in their hands.

LOGAN D. DAMERON

The list of pioneer medical men of Arizona is dwindling year by year. With the passing of Dr. Logan D. Dameron, of Phoenix, there remains only one living member of the group of charter members of the Arizona Territorial Medical Association, organized on May 25, 1892. This remaining member is Dr. H. A. Hughes, of Phoenix, the father-in-law of Dr. Dameron.

Dr. L. D. Dameron was born in Missouri in 1867, receiving his medical education at the Hospital College of Medicine, Louisville (now merged with the University of Louisville) in 1891, coming directly to Phoenix in that year. He was secretary of the Maricopa County Medical Society in 1892, when the small group of physicians in that society issued the invitation to the other physicians of the state to organize the territorial association, the organization meeting tak-

ing place in Phoenix on May 25, 1892. Dr. Dameron was the secretary of the Territorial Association in 1893, and served as its president in 1903. It was in this eventful year that the Medical Practice Act was passed by the Territorial Legislature.

Dr. Dameron was associated in practice with Dr. H. A. Hughes, his wife, who survives him, being a daughter of this pioneer physician. Six years ago, Dr. Dameron suffered a cerebral hemorrhage while sitting at his office desk. He partially recovered from this, but was left with a hemiplegia. After two years he resumed practice and for the past three years has filled the position of Health Officer for the City of Phoenix. His death was due to a second attack of apoplexy, while on a visit at the home of his daughter in Los Angeles. He is survived by his wife, a son who is a practicing dentist in Phoenix, and a daughter who lives in Los Angeles.

Universally loved and respected, a long and honorable career as a physician, Christian citizen, and friend of thousands, has come to a close; the entire medical profession of Arizona will mourn his passing.

JAMES A. OLLERTON

The untimely death of Doctor James A. Ollerton, of Mesa, Ariz., came as a shock to his many friends and confreres of central Arizona. From some unknown source he contracted a fulminating typhoid which resulted fatally in less than two weeks.

Dr. Ollerton located in Mesa in September, 1925, after graduation from University of California Medical College, and very rapidly established himself in the community by his ability and faithful attention to duty. He was a member of the Maricopa County Medical Society and the State Association. He was City Health Commissioner for the town of Mesa. He was a capable physician, held in high esteem by the medical profession of his community, who join in sympathy with his bereaved family.

HARRY S. SQUIRES

Dr. Harry S. Squires died at his home in El Paso, Texas, January 16, 1927, at 2 p. m. He was born in 1856 at Bennington, Vermont; graduated in medicine at Harvard University in 1878. In 1881 he went to Mexico and for 23 years was Chief Surgeon of the Mexican Central Railroad. He remained at the head of the Hospital Service of this railroad until his retirement, ten years ago, when he moved to El Paso, making that his home until the time of his death. He is survived by his widow.

Arizona State Medical Association

Thirty-Sixth Annual Meeting

Yuma, Arizona, April 21, 22 and 23

HEADQUARTERS—HOTEL DEL MING

Headquarters:—The official headquarters and registration bureau will be at the new Hotel del Ming, which is on the bluff overlooking the river.

Entertainment:—The Yuma County Medical Society will be the hosts of the Association. They have not yet announced the details of the social entertainment, but it is safe to say that these features will be unique and thoroughly enjoyable.

Papers:—All papers read before the Association will be limited to TWENTY MINUTES in presentation. Authors are requested to govern themselves accordingly and not suffer the embarrassment of having time called on them. When lantern slides are to be shown, the reading of paper and demonstration of slides must all come within the time limit.

All papers read before the Association become the property of the Association and are to be turned over to the secretary for publication in the official journal.—SOUTHWESTERN MEDICINE.

Discussions:—Opening and closing discussions are limited to FIVE MINUTES; other discussions to THREE MINUTES.

In the program below, a brief synopsis has been furnished for each of the papers, wherever this could be obtained. Members who expect to attend the Yuma meeting are asked to read these synopses and communicate with Dr. Chas. S. Vivian, Goodrich Building, Phoenix, in case they desire to open discussion on any of these papers. This communication should be sent to him immediately, so these names may appear in the final program.

Reservations:—Make reservations immediately, if you expect to secure accommodations at the Hotel del Ming.

PROGRAM

THURSDAY, APRIL 21

Council Meeting, 9 a. m.

MORNING SESSION, 10 A. M.

Invocation.

Addresses of Welcome.

Introduction of President.

1. FRANK J. MILLOY, M. D., - - Phoenix, Arizona
"Blood Transfusions."

Description of method with results of sixty transfusions.
Discussion.

2. A. B. COOKE, M. D., - - Los Angeles, California
"The Use and Abuse of Iodine in the Treatment of Goiter."

That iodine has a place in the treatment of goiter is one of the established truths of modern therapy, but its indiscriminate use constitutes a growing menace. The proper use of iodine; (1) as a preventive, (2) in the treatment of non-toxic goiter, (3) in the treatment of toxic goiter. Discussion of the different types of goiter and the importance of accurate differential diagnosis before exhibiting iodine. The abuse of iodine: (1) the failure to realize the indications for the remedy and its clear cut limitations, (2) the tendency to regard it as a curative agent in the management of toxic cases, and (3) the commercial exploitation of iodine.

3. ROSS MOORE, M. D., - - Los Angeles, California
"A Consideration of Certain More or Less Intangible Thyroid Manifestations."

Thyroid relationships to nervous and mental symptomatology are sketched briefly. One or two cases are then discussed in an effort to reach a more accurate quantitative and qualitative estimate of irregular thyroid activity.

Discussion of papers of Drs. Cooke and Moore.

AFTERNOON SESSION, 1:30 P. M.

4. Demonstration of Case History Analysis and Discussion.

(Presentation of the "Yavapai Plan" of case history study by the group plan, as devised by the Yavapai County Medical Society and the Staff Officers of Fort Whipple Hospital.)

5. C. A. THOMAS, M. D., - - - - Tucson, Arizona
"Treatment of Conditions in the Abdomen with Generalized Peritonitis."

Long Incision left open and used for purpose of drainage. Positioning of the patient. Large quantities of saline per rectum.

Discussion.

6. STUART PRITCHARD, M. D., Battle Creek, Mich.
"Thoracic Pain."

Importance of thoracic pain in diagnosis and therapeutics. Discussion of affections of thoracic walls reflecting pain. What is intercostal neuralgia? Influence of certain toxins as causative factors. Discussion of neuritis and neuralgia. Discussion of different types of pleural pain. Disease of cord or vertebrae involving spinal roots (radicular pain). Discussion of source of pain.

Discussion.

7. BERNARD L. MELTON, M. D., Phoenix, Arizona
"Headache of Ocular Origin."

Frequency and character of ocular headache; differential diagnosis; causes of ocular headache; refractive errors; disturbances of extra-ocular muscles; eye diseases; illumination faults; neurasthenia and hysteria; poor health and poor hygiene; mechanism of production of ocular headache; treatment; conclusions.

Discussion.

Executive Session of House of Delegates.

THURSDAY EVENING

Social Entertainment by Yuma County Medical Society.

FRIDAY, APRIL 22

MORNING SESSION, 9:30 A. M.

8. A. A. SHELLEY, M. D., - - - Phoenix, Arizona
"Granuloma Fungoides, with Report of Case."

"A rare, chronic, malignant disease, characterized in the early months or years by eczematous lesions, which later become infiltrated, with the subsequent appearance of papules, nodules or tumors, with formation of mushroom-like ulceration, usually going on to fatal termination. Report of case of extensive and rather typical lesions which ran a course of some years, exhibiting all the stages in the course of the disease; the failure of all treatment until the prognosis was alarming, and apparent cure by x-ray treatment.

Discussion of this paper to be opened by

W. WARNER WATKINS, M. D., Phoenix, Arizona

9. M. C. COMER, M. D., - - - Tucson, Arizona
"Report of Six Unusual Cases."

1. Screw-worm infestation of the nares. 2. Patent thymic duct or branchial or lateral cervical fistula. 3. Sudden death in child simulating status lymphaticus. 4. Acute pericarditis with effusion, a sequel to subacute sinusitis. 5. Death from furuncle of the anterior nares. 6. Mastoiditis, acute purulent, without purulent infection of the middle ear. Lantern slides.

Discussion of this paper to be opened by

JOHN J. McLOONE, M. D., - Phoenix, Arizona

10. R. J. STROUD, M. D., - - - Tempe, Arizona
"Myiasis in the Southwest, with Particular Reference to the Species Crysomyia Marcellaria."

Sixteen cases seen by the author with one death. Etiology and method of transmission. Parts attacked. Treatment with special reference to the nose. Prevention. Syphilitic relationship. Report of cases and their peculiarities.

Discussion of this paper to be opened by

C. E. YOUNT, M. D., - - - Prescott, Arizona

11. WALTER BERNARD COFFEY, M. D., San Francisco
 Chief Surgeon Southern Pacific Railway.
"Treatment of Anginal Pain by Injection of the Cervical Sympathetic Ganglion."

AFTERNOON SESSION, 1:30 P. M.

12. E. G. COLBY, M. D., - - San Diego, California
"Brittle Bones and Blue Sclera."

Discussion of nomenclature. Resume of literature. Presentation of four cases with history of twenty-eight other members of family.

Discussion.

13. ORVILLE HARRY BROWN, M. D., Phoenix, Arizona
"Some Fundamental Principles of Diet."

Much false information about diet regularly reaches the public and frequently has undue influence; also members of the profession are now and again confused on facts. Examples of the fact that physicians do not get correct principles in diet at all times is the ordinary hospital diet lists, variously designated liquid, soft, regular, etc. Sansum's work upon acid and alkali ash foods and their significance, Allen's results with salt free diets, and other modern advancements.

Discussion.

14. NELSON D. BRAYTON, M. D., - - Miami, Arizona
"Lupus Vulgaris."

Report of Case Originating in Arizona, with presentation of patient and discussion of the disease.

Discussion.

15. STERLING N. PIERCE, M. D., Los Angeles, Calif.
"The Low or Cervical Transperitoneal Cesarean Section."

The transperitoneal cesarean section offers hope to those who are trying to reduce the maternal mortality incident to

the so-called classical cesarean section. It can be as safely performed after as before the onset of labor. The danger of peritonitis in the delayed cases is eliminated because the wound in the uterus is covered with peritoneal flaps. Intestines are spared exposure and trauma. Position of the wound promotes healing. Detailed description of the operation, with lantern slides.

Discussion.

Executive Session of the House of Delegates.

FRIDAY EVENING

Social Entertainment by the Yuma County Medical Society.

SATURDAY, APRIL 23

Council Meeting, 9 a. m.

MORNING SESSION, 10 A. M.

16. CHARLES S. VIVIAN, M. D., Phoenix, Arizona
President's Address.

17. ROBERT V. DAY, M. D., Los Angeles, California
"Margin of Safety in Urological Operations."

Principal dangers in urologic operations generally; hemorrhage, shock, infection, uremia, pneumonia, myocardial and vascular disease, embolism; types of anesthesia as factors. Specific pathology; comparative dangers of suprapubic and perineal prostatectomy. Punch operations on the bladder neck; relative danger of the open and various closed methods. Operations for urethral stricture. Other factors concerned in estimating dangers of urethrotomy; urinary infiltration; tumors of the bladder; vesical diverticula; renal tuberculosis; stones; concomitant hypertension and toxic nephritis; operations on infants and children.

Discussion of papers of Drs. Vivian and Day by

W. G. SCHULTZ, M. D., - - Tucson, Arizona

18. M. C. HARDING, M. D., San Diego, California
"Bunions; Different Types, Different Treatment."

Halux valgus; metatarsum varum and displaced sesamoids; osteo-arthritic enlargements; halux rigidus; appropriate operations.

19. W. WARNER WATKINS, M. D. AND HARLAN P. MILLS, M. D. - - - Phoenix, Arizona
"Cooperation Between Clinician and Laboratory."

In order to secure the greatest possible results from the clinical laboratory, three things are essential: (1) A clinician alive to the possibilities of clinical laboratory methods; (2) laboratory pathologists who can direct the inquiry into the proper paths from the laboratory standpoint, and correctly interpret for the clinician the results obtained, if this is desired; (3) cooperation on the basis of consultation, mutual confidence and respect, between the clinician and pathologist, to secure the desired end results.

Discussion.

20. F. T. FAHLEN, M. D., - - - Phoenix, Arizona
"Cardio-Vascular Disease."

Discussion.

21. CLARENCE E. REES, M. D., San Diego, California
"Cautery in Treatment of Cancer."

Summary public campaign for the prevention of cancer. Lack of agreement and means in the profession generally for treating precancerous and early lesions. Necessity for means of treating precancerous lesions by physicians who first see them. Outline of simple method that can be used by any one. Method of using cautery in operable and advanced lesions. Comparative value with other methods. Case reports.

22. E. W. PHILLIPS, M. D., - - Phoenix, Arizona
"Orris Coryza."

Orris root is a common cause of hay fever in women; failure to recognize this is a frequent cause of failure in treating hay fever patients. Review of 105 cases carefully tested for this sensitization. Orris coryza usually takes the form of seasonal hay fever with irregular onset date and with marked variability in severity of symptoms. All women with hay fever or with stubborn rhinitis not clearly traceable to infection should be tested for this sensitization. Conclusions.

Discussion.

Open Meeting of the House of Delegates.

DEACONESS HOSPITAL (Phoenix) INSTALLS RESIDENT PHYSICIAN.

On account of the technical requirements, none of the hospitals in Arizona have succeeded in being placed on the list of "Hospitals Approved for Internships." To meet the need for the kind of service supplied by internes, the Deaconess Hospital at Phoenix has installed a resident physician. Dr. Jesse D. Hamer has been secured to fill this place. Dr. Hamer received his medical training at the Western Reserve School of Medicine of Cleveland, with several months service at the Cleveland City Hospital. He is twenty-eight years of age, married, and in good health. The staff of the hospital are enjoying the assistance afforded by his services in the hospital, and he will no doubt find there the same valuable experience which a regular internship would afford.

GRANT COUNTY (N. M.) MEDICAL SOCIETY

Regular meeting of the Grant County Medical Society was held February 25, at the Officers' Club, Fort Bayard, N. M., at 8 p. m., Dr. Kramer presiding.

The roll call showed the following present: Drs.

Kramer, Wood, Groom, McFarland, Hubbard, Groves, Gunter, Lacy, Frazin and Mr. Stockton.

Minutes of the last session were then read and approved without change.

Clinical cases: Drs. Danielson and Carlbard were unable to be present with their cases as scheduled. Dr. Wood presented a case of dextro-cardia resulting from hydro-pneumothorax, left.

Papers: Dr. Hubbard's lecture, with stereopticon views of foreign bodies in the trachea and esophagus, was intensely interesting and beneficial to all present.

Communications: A letter was read from Dr. Yater concerning "Board of Examiners in the Healing Arts of the State of New Mexico." It was moved and carried that the Grant County Medical Society is heartily in sympathy with such a board of examiners, and this society resolves to write a letter similar to that written by the Chaves County Medical Society, the same to be sent to our state representatives.

The meeting adjourned at 10:15 p. m.

J. P. Wood, Secretary.

EL PASO COUNTY MEDICAL SOCIETY

The El Paso County Medical Society met in the First National Bank building, February 14th, with the president, Dr. E. B. Rogers, in the chair.

The paper of the evening was a presentation of "Peptic Ulcer," by MAJOR HARRY G. WYER. It was a paper that had been prepared for instruction of the junior officers of the Medical Corps of the

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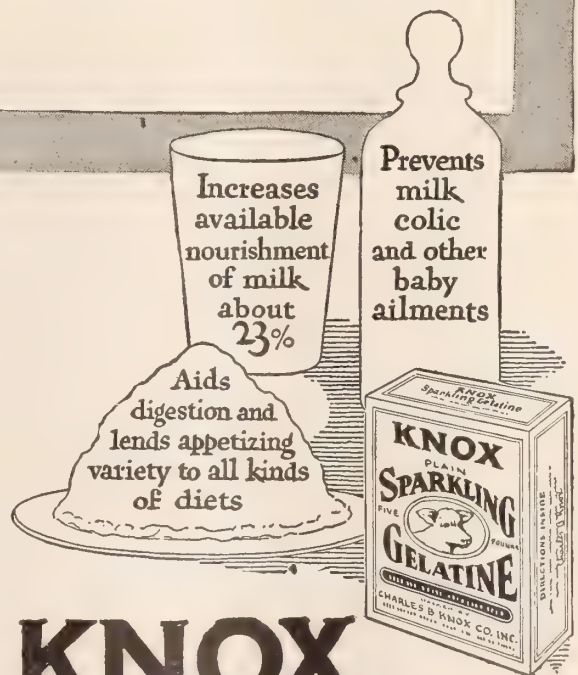
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Army. It was a delightful resume of the literature; it not only revealed modern diagnosis and management, but presented the theories as to etiology in such a way as to leave with his listeners much food for thought and debate.

In the discussion of the paper, DR. R. B. HOMAN recited personal experience as a sufferer from extensive hemorrhage due to peptic ulcer. From this experience he formed three conclusions; the first impression was the seriousness of the condition; this provoked fear, and, when once frightened, he was a perfectly cooperative patient.

DR. JAMES VANCE said that ulcers should first be considered a medical problem, and the conservative measures incident to medical management should first be attempted. Surgery can be employed at any time and should, therefore, be considered late, and not early. The true surgical case, and the one that invariably has given him good results, has been the one in which medical treatment failed.

DR. P. R. CASELLAS stated that up to the time of the Sippy monograph little aid had been given diagnosis by the x-ray. However, since that splenectomy of Sippy, x-ray has come to be the pivotal point on which the diagnosis rests. He emphasized the study of the peristaltic wave in ulcer. The x-ray can determine the perforative type which is the type that is surgical; the indurative type as determined by the x-ray, is medical.

DR. HARRY LEIGH cited the work of Merriott, who showed that by raising the hydrogen ion content of the stomach by diet to Ph 3, the stomach became sterile. It should follow from this work that reduction of the acidity by alkalies might possibly increase bacterial growth.

MAJOR WYER, in closing, stated that the motive of the paper was to arouse interest in etiological study.

EL PASO COUNTY MEDICAL SOCIETY

(February 20th)

DR. L. M. SMITH reported two cases of skin tuberculosis; the first was a case of tuberculosis venosa cutis in a Mexican boy of fourteen years. Sub-intensive x-ray has apparently produced a cure. The second case, a Mexican girl of six years with cervical tuberculosis adenitis. On the left side and just below the glands an ulcerative lesion had developed. This case was responding well to x-ray treatment. Dr. Smith pointed out the superiority of x-ray over ultraviolet rays, because of the deeper penetrability.

DR. R. B. HOMAN presented two cases of tuberculosis of the eye. He paid tribute to the late Dr. H. H. Stark, who had done such extensive original work in these conditions. Symptoms in these cases had cleared up under careful tuberculin medication. The cases were discussed by Drs. Leigh, May and Werley.

EL PASO COUNTY MEDICAL SOCIETY

(February 28th.)

Dr. W. H. ANDERSON presented a case of a white woman, 42 years old, who, three months ago had extensive cervical adenitis, diagnosed tuberculosis. Under three months of treatment by the carbon light, glands were completely reduced, being non-palpable.

DR. GEORGE TURNER presented a pathological display of several cases, a full report of which appears under report of the Masonic Hospital Staff meeting. A case not reported there was one of a middle aged man who died suddenly, apparently of pulmonary hemorrhage. At autopsy the lungs were found negative; there was extensive syphilitic aortitis with aneurysm of the descending aorta which had eroded into dorsal vertebrae and to the root of the

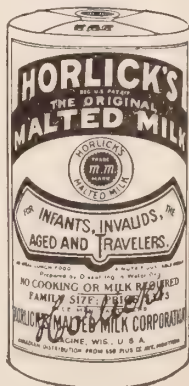
right lung. The aneurysm had ruptured into a large bronchus, which was responsible for the death, and the appearance of a massive pulmonary hemorrhage.

DR. W. W. WAITE reported two cases of death due to congenital heart lesions. One was a child in which there was a patent foramen ovale; the other a case of perforated heart septum. Dr. Waite stated that there were no other apparent lesions and that these children possibly died from some slight exposure. These cases do very well until exposed to marked temperature change, in which case the heart is unable to cope with the additional strain, and the child succumbs. The very interesting specimens were displayed. As a part of this exhibition, DR. HARRY LEIGH presented drawings he had made showing the embryological development of the heart and the faulty developments that produce the congenital anomalies, the arrest of development at some particular stage producing the anomaly. The literature shows 149 different anomalies.

In discussion of the case DR. WERLEY stated that 50 per cent of patients with congenital heart lesions are either born dead or live but a few days; however, there are a number of congenital defects that do not shorten life. He named patent intraventricular septum, patent ductus arteriosus, and pulmonary stenosis. In patent foramen ovale he stated that the prognosis was less favorable. The cases were further discussed by Drs. Waller, Leigh, Werley and Laws.

DR. J. W. LAWS presented a case of advanced tuberculosis that developed frequent urination, and upon examination of the urine a fecal odor was detected. Dr. Jamieson was called to do a cystoscopic examination and found a fistula in the bladder that communicated with the rectum. The case came to

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These photographs are used through the courtesy of Northwestern University Medical School, Chicago. Above is a view of one section of the Physical Therapy Clinic, showing three of the treatment cubicles.

Sinusoidal Current for radial nerve paralysis.

Phototherapy for pain in back following muscular injury.

Ultraviolet irradiation with Water-Cooled Quartz Lamp in treatment of chronic otitis media.

Physical Therapy Apparatus Designed to Medical Ideals

IN the Dec. 11th issue of the Journal of A. M. A. were printed the Official Rules of the Council of Physical Therapy of the American Medical Association. These official rules "have been adopted primarily with the view to protecting the medical profession and the public against fraud, undesirable secrecy and objectionable advertising in connection with the manufacture and sale of apparatus and methods for physical therapeutic treatment."

Quoting further from the A. M. A. Bulletin of the House of Delegates: "It is hoped that the medical profession will give consistent support to this effort for sound therapy. Physicians may well follow in their choice of apparatus and in their work the opinions of the Council on Physical Therapy as to what is reliable."

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autopsy and the specimens presented showed a nodular tuberculous cecum; there were ulcers in the sigmoid extending to the rectum, and it was one of these ulcers that had perforated into the bladder.

ST. JOSEPH'S HOSPITAL STAFF MEETING.

(Phoenix, Feb. 14, 1927.)

The regular staff conference of St. Joseph's Hospital, Phoenix, Ariz., was attended by fifty-two people, including forty-six members of the staff, three members of the hospital organization, and three visitors. Among the visitors was Dr. Franklin Martin, Director General of the American College of Surgeons.

The program presented was in charge of Dr. Kimball Bannister and covered a critical review of the obstetrical work in the two hospitals in Phoenix during the years 1925 and 1926. About 770 cases were reviewed, and the following phases of obstetrical practice were covered:

"Conditions with Indications and Contra-Indications for the Use of Forceps." Dr. R. W. Eaton. Discussion opened by Dr. A. J. McIntyre.

"Conditions with Indications and Contra-Indications for Caesarian Section," Dr. E. R. Charvoz. Discussion opened by Dr. J. M. Greer.

"Management of Eclampsia and the Pre-Eclamptic State," Dr. Dudley Fournier. Discussion opened by Dr. A. M. Tuthill.

"Critical Study of Obstetrical Deaths in the Two Hospitals for 1925 and 1926," Dr. John Wix Thomas.

"Are We Practicing Good Obstetrics?" (Comparison of Phoenix hospital records with those of

obstetrical departments of large hospitals elsewhere), Dr. Kimball Bannister.

"Comments on Obstetrical Records," Dr. W. W. Watkins.

Following the completion of this program, Mr. Crutchfield, a field worker for the Gorgas Memorial, was introduced and spoke for a few minutes.

Dr. Franklin Martin then addressed the staff for about twenty-five minutes, chiefly on the importance of the work of the Gorgas Memorial.

Adjournment at 10:25 p. m.

W. Warner Watkins, Secretary.

STAFF MEETING OF EL PASO CITY-COUNTY HOSPITAL

The staff of the El Paso City-County Hospital met at 6:30 p. m., February 16th. The following members were present: Drs. Cuming, Strong, Von Almen, Barrett, May, Barnes, Wilson, Long, Gallagher, Jamieson, W. Rogers, Cathcart, Stevenson, Molloy, Varner, Thompson, Werley, Casellas, Turner, and Smith.

The business of the staff was transacted, and the following cases, which died in the hospital during the preceding month were reported:

DR. GALLAGHER reported the case of a woman admitted January 18th on account of increasing dementia for the past year, and a mass in the abdomen. The temperature was 99.4 to 99.8. The patient was semiconscious on admission. Reflexes of the arms and legs were increased. Pupils were negative. There was a mass extending from the pubis to the umbilicus. The preoperative diagnosis was paresis and fibroid. On operation a purulent cystic right kidney and bilateral salpingitis were found. Saline



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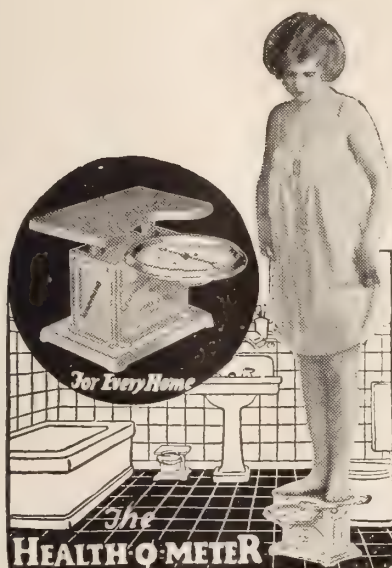
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solution was given in the thighs, 250 c.c. every four hours. The patient refused food and died of inanition. The temperature before death was 102.4.

DR. WERLEY reported the death of a negro man, aged 66, who came to the hospital with marked ascites and gasping for breath. The urine was normal. The blood pressure was 175/105. There was a temporary improvement from digitalis, but the patient died. The diagnosis was essential hypertension.

DR. STEVENSON reported a case of a patient who was accidentally shot thru the umbilicus. The patient was very weak. The pulse was feeble and rapid. X-ray examination showed the bullet in the pelvis. At operation many perforations were found in the mesentery, transverse colon, and small intestine. The perforations were repaired, but the patient died in 36 hours, presumably from hemorrhage.

DR. STEVENS reported a case, of a patient who came in with history of difficult and painful urination for six months. There had been no urination or defecation for five days. Examination showed a negative chest; sclerotic arteries; distended abdomen with a mass in the lower part, flat on percussion; an enlarged prostate; a urethral stricture of small calibre. Diagnosis: Intestinal obstruction. On operation, appendicitis and total obstruction at ilcoecal valve were found. There were old adhesions at the ileocecal valve and at the splenic flexure. The terminal end of the ileum was gangrenous. Appendectomy was performed. The patient died the morning after the operation. Pathologic examination of the appendix showed the wall infiltrated with polynuclear and round cells, with scar tissue present. Pathologic diagnosis: acute and chronic appendicitis.

DR. BARRETT reported the death of a child admitted December 24th, with a history of fever and night crying for 14 days. The patient was semi-comatose; the eyes were set, the neck rigid. The heart, lungs, abdomen, skin, and genito-urinary organs were negative. There was slight pharyngeal inflammation, and the child was dyspneic. There was no glandular enlargement. The pupils were sluggish. The working diagnosis was meningitis, probably tuberculous. Spinal puncture on December 24 showed a clear fluid which gave a negative Wassermann reaction. Another puncture was made December 27th. No. T. B. were found. The cell count was increased, although the exact count is not recorded. The treatment was directed at relieving the tension and giving as much feeding as possible. The patient died in convulsions with opithotonus. A final diagnosis of tuberculous meningitis was made on the strength of the increased count with the clear fluid.

DR. THOMPSON reported a death from bichloride poisoning. The patient took seven bichloride tablets by mistake. The stomach was washed and the patient given egg albumen. Sodium thiosulphate was given intravenously. The patient vomited bright blood all along. Suppression of urine developed. Hot packs, pilocarpine, and hemostatic serum were given, but the patient died.

DR. THOMPSON also reported a death from tetanus which followed a dog bite two weeks before. The patient had been having pain in the leg and fever for several days, and was becoming very nervous. Pain traveled from the leg to the thigh, and then to the spine. The patient had had spasms for five days. The symptoms developed too soon for



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hydrophobia. A total of 35,000 units of tetanus antitoxin intraspinally, and 30,000 intravenously was given. Antitoxin had not been administered at the clinic when the wound was dressed. Tetanus bacilli were grown from a piece of clothing taken from the wound.

DR. TURNER, in discussing this case, stressed the necessity of giving antitoxin in all cases of punctured wounds, especially when the wound is thru the clothing. DR. LONG stated that there is not as much tetanus in dry climates as there is where here is more moisture. DR. STEVENSON can recall very few cases of tetanus in this city. He estimates that not one per cent of wound cases develop tetanus here. DR. CASELLAS stated that in Porto Rico tetanus is very common, and that antitoxin is not considered of value in treatment there. The treatment used there consists of the intravenous administration of 50 grams of magnesium sulphate in a ten per cent solution, with one half drop phenol added. This is repeated in six or eight hours. The dose is diminished or increased according to the amount of rigidity. If this treatment is begun early the mortality is low.

DR. BARRETT recited the successful experience of one authority with intramuscular injections of three minims of saturated solution of phenol in ten minims of water.

DR. WERLEY emphasized the importance of keeping these patients in a dark room. He stated that in Omaha they are treated in a tunnel, and the results there are good.

DR. THOMPSON stated that most authorities say magnesium sulphate has no effect on the infection, but acts as a hypnotic and relaxes the spasms. Antitoxin in small doses is useless, but is curative in large doses.

DR. MOLLOY said that where the tetanus incidence is highest the mortality is lowest. He raised the question of the influence of sunshine on the low incidence of tetanus in this portion of the country.

DR. TURNER thought that the abundant sunshine here was the cause of the scarcity of tetanus. For the same reason there are less bacteria of other kinds.

DR. CASELLAS thinks the sunshine has little to do with it, as the tetanus bacilli are anerobic and the ultraviolet rays are not sufficiently penetrating to reach them. This part of the country is largely non-agricultural, and the tetanus bacilli live best in cultivated land, where they are buried.

DR. LONG emphasized the necessity of opening and cauterizing all wounds.

DR. CASELLAS quotes Hess as saying that Porto Rico has more sunshine than any other country. In spite of this the tetanus incidence there is high.

DR. THOMPSON said that opening and cleaning out is as important as any other part of the treatment.

DR. VARNER reported the case of an unmarried girl, aged 22, admitted January 7, eight months pregnant. There was a history of twenty-five convulsions since the night before. The patient was comatose on admission, and the temperature was 100.4. Later in the day the temperature was 103 and the pulse 104. There were three convulsions after admission. The stomach and colon were washed out and four ounces of castor oil put in the stomach. The patient went in labor and delivered normally, but the baby was dead. The blood pressure was 190/140 on admission. Salts and fluids were given. The next day the patient was better. The urine at this time contained albumen. The morning after delivery the patient was semiconscious. The blood pressure was 120/70. At 10 a. m. the next day temperature was 104 and the pulse 130. At 6 p. m. the temperature was 106. The patient then died. Dr. Varner said he was unable to account for the rapid

drop in blood pressure. This patient had very little edema. Cases with edema have a better prognosis. Diagnosis: Eclampsia.

DR. JAMIESON stated that he does not think it a good idea to push fluids in edema cases. Dr. Werley and Dr. Varner did not agree with Dr. Jamieson on this point.

Dr. Varner reported two other stillbirths.

DR. ARONSON reported the death of a boy two and a half years old from skull fracture. The fracture involved the nose and maxilla. There was bleeding from the left nostril. The pupils were unequal. Adrenalin and hypodermoclyses were given, but the patient died in two or three hours.

The staff adjourned at 9 p. m.

L. M. Smith, Secretary.

ARIZONA-GRAPHS

By Dr. W. V. Whitmore, Tucson, Ariz.

Note:—At the dinner-dance tendered the Association by the Pima County Medical Society, on the occasion of the Twelfth Annual meeting of the Medical & Surgical Association of the Southwest, held in Tucson, November 12 to 14, 1926, the following introductory remarks, prepared by Dr. Whitmore, as Toastmaster, were not delivered, owing to the late arrival of guests. They are published here, on account of their general interest.)

NATURAL

1. The Grand Canyon of the Colorado is the most stupendous and astounding of the natural wonders of the world—the greatest gash in the earth's crust—a gigantic chasm one mile deep, 13 miles across and 200 miles long.

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2. Arizona is noted for its climate. Fortunately we have all varieties. This was well expressed by the preacher, who was sent to Tucson in early days. He served out his year and resigned, saying; "It is no use to preach in Tucson. For nine months of the year Heaven has no attractions, and for the other three, Hell holds no horrors." The rest of the state has only two kinds of climate, viz. the ideal and the "unusual."

3. We have the Petrified Forest—an unrivaled gem in nature's laboratory. The only place in the world, as far as I am aware, where in the branches of the petrified trees, the petrified birds warble their petrified songs.

4. Near the station at Canyon Diablo an immense meteor has caused a hole in the surface of the earth 3,900 feet in diameter and 600 feet deep, 1,000,000 tons of sandstone were displaced by the impact of this celestial visitor. Within five miles of this crater more fragments of meteoric iron have been found than in any other part of the world. The microscopic diamonds, frequently found in meteoric iron, were first discovered in Arizona specimens.

5. On our northern plateau we have the largest pine forest in the United States. And in the northeastern section of the state is the largest natural bridge in the world.

6. We have the Hassayampa River—famed in song and story as a stream of water, from which when one has once imbibed, he is thereafter rendered immune from telling the truth.

7. Arizona's sunshine is really her most valuable asset. There are times when we may feel over-supplied with this blessing. Many of you know—or some of you have seen—the notice upon the hotel at Yuma: "Free meals any day the sun does not shine." During the past year there was such a day, the first in 50 years. Two weeks ago the weather bureau announced fog in Yuma—that during the recent political campaign—but was the first recorded in 57 years.

ACQUIRED

1. Arizona is of especial interest to the Archeologist and Ethnologist. There are several reasons. The oldest building in the United States stands 70 miles to the north of us—Casa Grande—a large four-story adobe building which was in ruins when Coronado made his famous expedition through this section in 1540.

Arizona and New Mexico have more cliff dwellings to the square inch than any section of the country.

Rather recently we have been hearing about cave dwellers. In some cases 100 rooms have been unearthed, usually underneath the cliff dwellings—being several centuries earlier.

Whole villages have recently been uncovered, especially in New Mexico, which must have accommodated over 1000 people.

From the Casa Grande ruins, the cliff dwellings and the uncovered villages, evidence is found of a civilization centuries before the birth of Columbus and antedating even the Aztec and Toltec periods.

2. Nine miles south of us stands one of the oldest, most beautiful and best preserved Spanish Missions upon the North American continent.

3. Arizona is of special interest to the geologist. The Grand Canyon furnishes the best illustration of the formation of the earth's crust, and, at the same time the greatest example of erosion in the world. Only a few weeks ago, one of the geologists of the University stated that the Tucson Mountains contained some of the oldest rocks in America. On almost the same day our archeologist, by the discovery of stone implements in a

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certain stratum of earth, in Cochise County, is convinced that man must have inhabited this section thousands of years before he is generally supposed to have done so.

Only this week one of the leading newspapers of California announced that several members of the faculty at Harvard advised a student desiring to specialize in archeology that, in their opinion, the most comprehensive course in that line could be had under Dean Byron Cummings at the University of Arizona, adding that Dean Cummings was a national authority and that Arizona was an archeological laboratory in itself. This reputation must have been attractive to that student, for he walked from Peabody, Mass., to Tucson, Arizona, early this fall.

4. Our cloudless sky and clear atmosphere make this section unrivaled for the study of astronomy. The description of a comet, designated as "a" comet of 1910, given by our astronomer was the one accepted by European scientists.

5. On the edge of our pine forest, already referred to, stands the largest saw-mill in the world.

6. For 15 years Arizona has produced more copper than any other state—producing about 50% of that in this country and 25% of that produced in the world.

At the completion of the Roosevelt Dam, that structure impounded the largest artificial lake in the world. This project is the only one of its kind that has proved unqualifiedly successful. Of course, a region which permits of 6, 8 or 10 crops of alfalfa each year, for example, is much more favorable than the north, where one or two crops a year is the limit.

8. At the time of admission to statehood—fourteen years ago—we averaged 13½ inhabitant to the square mile. From 1910 to 1920 Arizona gained in population over 63%—exceeding every other state. We still have room. About three years ago, a popular monthly magazine gave a resume of the medical situation of the country. This statement occurred; "In Arizona a doctor enjoys the unopposed practice of 11,341 square miles." This would seem to give weight to the Englishman's conclusion, viz. "In Arizona there is absolutely not a thing but 'expawns'."

Many of you are familiar with the Irishman's toast: "Here's to Arizona, with its broad rivers—and no water; with its immense herds of cattle—and no milk; a region where one can look further—and see less—than any state in the Union."

I will close with a personal allusion. In the early days of my residence here, about the only sentiment heard concerning Arizona was: "The land that God forgot." This expression was heard quite occasionally for some 10 to 15 years. No intimation of anything to the contrary made it rather natural to assume that there must be some foundation for such statements. But with the passage of time, with the expression no longer prevalent and with the gradual reception and appreciation of these features I have enumerated came slowly quite a radical change of ideas. I am free to admit that I have now come to accept the views of the modern theologians, viz., that the Creator spent the whole six days upon Arizona, and the rest of the world is a mere happen-stance.

BOOK REVIEWS

Prohibition at Its Worst, by Irving Fisher, Professor of Economics, Yale University; author of *Stabilizing the Dollar*, *The Purchasing Power of Money*, *How to Live*, etc.; The Macmillan Co., Publishers, New York.

The second edition of this book was needed with-

in a week after the first edition was off the press.

Professor Fisher has been collecting data upon the liquor question for the past twenty-five years and in this time he has radically changed his attitude toward it. This book is a direct outgrowth of the hearings of the Sub-Committee of the Committee on the Judiciary of the United States Senate in April of 1926.

Professor Fisher frankly states that he formerly was opposed to prohibition but that he has been gradually forced to the conclusion that prohibition is the only solution of the liquor question. That prohibition, which prohibits but little, has already done good, he says, is shown by the fact that there are fewer new recruits among drinkers than in pre-Volstead days. He shows most conclusively that statistics, as presented generally by the opponents of prohibition, are falsified, or at least made to tell untruths. He shows that the personal liberty leagues are composed chiefly of the brewery and liquor interests. And of the industries, he says: "The simple truth is, prohibition has replaced a parasitic industry by constructive industries."

Of personal and social liberty he quotes from Senator Borah: "The man in the automobile may be opposed to the eighteenth amendment, but he will instantly discharge a drinking chauffeur. The train may be crowded with delegates to the anti-prohibition convention, but they would mob the engineer who would take a drink while drawing his precious freight. The industrial magnate may talk critically of sumptuary laws, but he will apply them like a despot to the man who watches over the driving power of his vast establishment. When safety is involved, we are all dry. Where the exigency of modern life demands a clear brain and instant decision in order to save thousands of lives and millions of property, we are all drys."

In the chapter entitled the "Social Good," there are numerous statements such as "Twice as many children today would be victims of improper bringing up because of liquor, if the dry law were not effective." Fifty per cent of the aid required in homes was because of drunkenness and this cause has now dropped to one per cent of the total.

The tactical error, Prof. Fisher thinks has been in dropping the educational program and using a mere law enforcement program. He thinks that certain facts should be general property, for example the following: The influence of alcohol in typewriting efficiency was tested by Dr. Walter R. Miles. The typists generally thought the alcohol made them work faster and better, but Dr. Miles found, by actual tests, that without exception there was decreased efficiency. The number of strokes was decreased 2.6 per cent; the errors increased 39.3 per cent and the illegibility increased 55 per cent. One insurance company found that among its policy holders who used two glasses of beer or one glass of whiskey daily, the death rate was eighteen per cent above that among insured lives generally. Another company found the actual mortality among abstainers to be 65 per cent of the expected, whereas that for non-abstainers it is 90 per cent of the expected.

Regarding the proposition of light wines and beers, he says they are intoxicating by nearly unanimous testimony and hence cannot be allowed without modification of the amendment. Regarding modification of the amendment he says to have the answer, it is only necessary to reflect that before national prohibition came, thirty-five

states had already adopted state prohibition and that only thirteen states are needed to block repeal of the eighteenth amendment.

The question is propounded: "Is there any 'Wet' optimistic enough to imagine that he and his friends can convert all but thirteen states to his way of thinking?"

The average man, Fisher says, is generally sure that alcohol is a stimulant, that beer and light wines are healthful, that his thirst for them is natural and that most persons can use liquor in moderation; all four notions have been proven false. Men who have lived in Kansas know that it took a quarter of a century for prohibition to accomplish much there and so it will take time to be really efficient in the nation.

The greatest good can be accomplished by good example. Instead of a slogan of Personal Liberty, which is license rather than liberty, let it be "Better Boys and Better Business," as it has been in Kansas. It is well worth waiting for.

Prohibition is here to stay. Its full results will be attained by education.

Professor Fisher's book is well worth the time of all persons interested in the liquor question; every thinking person of the nation should be interested in the question; for what we do now will affect our great grand children most happily or most unhappily. Act wet, if you must, vote dry and be a hypocrite, if such it is, for the sake of future generations. At any rate read this little book and be informed on the subject.

Sixty Years in Medical Harness, or the Story of a Long Medical Life, 1865-1925, by Charles Benevlyn Johnson, M. D., author of *Muskets and Medicine*, *Medicine in the Fifties*, etc.; introduction by Victor Robinson; Medical Life Press, New York, 1926; \$3.00.

The Medical Life Press is doing commendable work in preserving historical data of medicine. Six books have already been published.

Dr. Johnson was born in 1843. He came into touch with medicine first in 1865 as a hospital steward with an Illinois battalion. There was then no thought of sanitary measures as we know them today. The study of medicine consisted of reading medicine in a preceptor's office and then going to lectures for a few months each winter for two years. Between courses it was the custom for students to practice. This Dr. Johnson did. His period between courses lengthened out to several years.

His first course of lectures was taken at the University of Michigan. The second was at the Ohio Medical College of Cincinnati. Dr. Johnson tells of his college professors—of their foibles and of their virtues. He tells also of leading medical men of the world for the latter half of the nineteenth century. His story of antiseptic surgery, the germ theory of disease and the many other medical innovations during his life make an entrancing story.

His intimate experiences, first as a student at Ann Arbor, and then in Cincinnati and as a practitioner on the prairies of Illinois, are interesting to the extreme.

Many intimate and personal touches occur all through the book. Dr. Johnson spent many pleasant days and, likely, nights writing this book. The reviewer spent a number of evenings most pleasantly in the reading of it. The physicians and others through the land who are interested in medi-

cal history will certainly do the same and then put this book in their collections.

We wish to extend to Dr. Johnson congratulations, for a long life, on a successful life, for it has been unusually useful, and on having written this book.

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The American College of Surgeons Regional Meeting of the Intermountain States will be held in Pueblo, Colorado, April 1st and 2nd.

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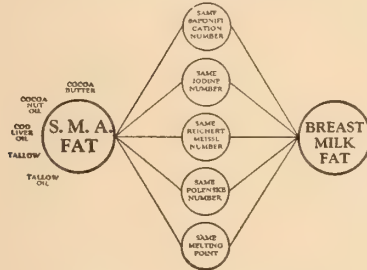
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APRIL, 1927

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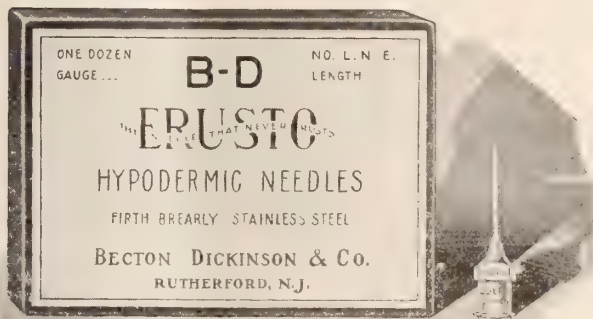
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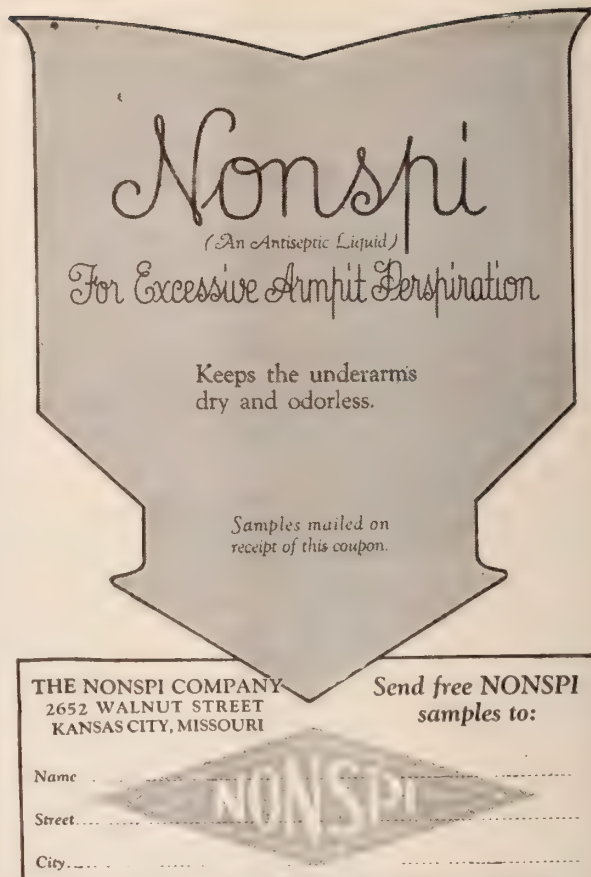
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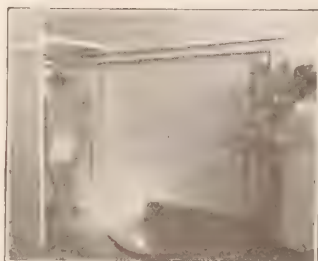


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EARLY MEDICAL CONDITIONS IN ARIZONA

W. V. WHITMORE, M. D.,
Tucson, Arizona

Read before the Pima County Medical Society, January, 1926.

In making a survey of a third of a century, I can hope to hit only the high places. My coming to Tucson was one of the results of the murder of Dr. J. C. Handy in this city in September, 1891. Bad feeling had been engendered between the doctor and Francis J. Heney—then a young lawyer here—because the latter had taken the case of Mrs. Handy for divorce against the doctor, after every other lawyer in the city had declined. The report is that for a year, whenever Heney happened to be within the sound of Dr. Handy's voice, loud threats were made against the lawyer. I suppose Mr. Heney is the only person who knows just what happened that September forenoon, when the two met at the southeast corner of the Court House lawn. The result of the meeting was that Dr. Handy was shot. He was taken to his home. Dr. Goodfellow at Tombstone was telegraphed for. A special engine brought him from Fairbanks. Some twenty perforations were found in four or five feet of the small intestine and Dr. Handy died upon the table.

The Southern Pacific officials persuaded Dr. Goodfellow to move to Tucson, where he at once became Division Surgeon. My former demonstrator of anatomy, Dr. I. B. Hamilton, of Los Angeles, took Dr. Goodfellow's place in Tombstone. The following March, Hamilton wrote me that he expected to join Goodfellow here in Tucson and wished me to go to Tombstone. After some two weeks of correspondence, he decided to remain in Tombstone and I came here.

A word as to local conditions at that time. I made the sixth physician in Tucson. Dr. Goodfellow had been here seven months; Dr. Fenner, some ten years; Dr. Matas, the father of Rudolph, had prac-

ticed here eight years; Dr. Spencer had been here several years—after twenty years in mercantile life in California; and Dr. J. T. Green, a young man, tuberculous, died during my first year here.

St. Mary's Hospital, opened twelve years before, was, at the time of my arrival—like the University of Arizona—an institution of one building, the central stone building. The sisters lived in an adobe house on the north side of St. Mary's road, just outside the Hospital grounds proper. In this building the nursery or orphanage was maintained for years. My understanding is that there was no operating room at St. Mary's until Dr. Goodfellow's arrival, for I distinctly recall the surgical nurse telling me that Dr. Handy attended to dislocations, fractures and amputations on the bed in the room or ward.

I think we may conclude, then, that there was very little surgery, as we understand the word today, attempted in this vicinity in those earlier days. Until Dr. Goodfellow's removal to San Francisco in 1896. Dr. Fenner did no surgery, preferring family practice. But when he succeeded Dr. Goodfellow as Division Surgeon here, he began to do considerable surgery.

Not for years—I would not attempt to say how many—after my arrival, was there a graduate nurse to be had in private work here. My recollection is that male nurses were occasionally leaving their cards with us.

Dr. Goodfellow had practiced medicine in Tombstone ten years. In order to have some conception of the results of such a residence upon a man of Dr. Goodfellow's ability, one must have some idea of the conditions of that time. Of course, you all know that Tombstone was not always the one-horse county seat that it is today. Discovered in 1878 by Ed. Schiefflin, it became in the early eighties a hustling camp. It boasted the largest number of inhabitants of any city, town or camp in Arizona. It then claimed 10,000, Tucson having only

5,000 and Phoenix a little over 3,000. At its height Tombstone was the greatest silver mining camp in the world.

From all I have been able to learn, it was also the toughest. Nearly all the gunmen of the West gravitated to Tombstone. There eventually developed two rival factions. The four Earp brothers, who had all been professional gamblers, and Doc. Holliday, a tubercular dentist, constituted one faction. In the early eighties one of the Earps was Marshal of Tombstone and another was a Deputy U. S. Marshal. A gang of cowboy outlaws, who refused to acknowledge the local supremacy of the Earps, consisted of two Clanton brothers, two McLowery brothers and one or two others. I think there was very little to choose between the two gangs. The Earps certainly showed no great courage at the final meeting which led to almost the annihilation of the Clanton gang, attacking the latter when they were peaceably leaving Tombstone for their ranch, shooting them down practically from ambush and at a time when they knew that two of the Clantons were unarmed, as the Marshal himself had relieved them of their firearms the evening before. But as two of the Earps were so-called "peace officers," their action had some semblance of law and order, and it was so decided.

A word of testimony from a man who was on the ground. In the late seventies the Episcopal Church of the country appointed bishop after bishop from the east, south, and middle states to take charge of their work in New Mexico and Arizona. Not one of them ever showed up; every one resigned. Finally they tacked this work on to Bishop Hall, who was in charge of California. In 1880 he visited the territory. He reported: "Phoenix is a pleasing place; Tucson is an important town and Tombstone is the condensation of wickedness."

With this little sketch of conditions in Tombstone, I think you will accept the truthfulness of Dr. Goodfellow's statement to me that he had presumably had greater practice in gun-shot wounds of the abdomen than any other man in civil life in the country. And I think we may conclude that this extensive practice laid the proper foundation, both in experience and courage, for him later to attempt operations—new both to himself and to every one else.

I have stated that there were no nurses here. The result was that, as far as Dr. Goodfellow's work was concerned, the nurse's work fell upon me. During the six

months I served as his assistant, the greater part of his surgical operations were at the patient's home. At 8 o'clock on the morning of the operation I left the office with a carryall filled with impedimenta, viz.: an old-fashioned, small, wooden operating table and five large satchels filled with instruments, dressings, anesthetics, etc. Instruments and dressings were arranged for use upon antiseptic towels.

About the end of my first week here came our first operation. The wife of a railroad man had been confined by Dr. Spencer six weeks before. Infection followed and Dr. Goodfellow removed ovary, tube and a part of uterus. My outstanding recollection of this case is that for about a week Dr. Goodfellow and I went to the house four times a day to irrigate that abdomen—6 o'clock in the morning, at noon, 6 o'clock in the evening and at midnight. In self defense, the patient finally recovered.

My fourth week here was devoted to surgical operations. Dr. Goodfellow had been saving up cases. He had his friend—who was also my friend—Dr. Francis L. Haynes, of Los Angeles, come here and there were one or two operations a day for at least five days. The first case had rather interesting features. It was the divorced wife of Dr. Handy—a vaginal hysterectomy for cancer of cervix. Neither of these surgeons had ever performed this operation. That was the day when large clamps were used to control hemorrhage. When the surgeons had finished, just how many pounds of steel stood out into the world I could not say. The patient was put to bed, instruments were cleaned and we partook of luncheon. There was a persistent oozing of blood that worried Drs. Goodfellow and Haynes. About 2 o'clock the patient was put on the table, anesthetic given and clamps readjusted. Before dinner I sneaked out and made some calls, but at 8 p. m. the procedure was repeated. At 11 p. m. the surgeons went home, leaving me in charge. The next day I learned from Dr. Goodfellow that he had driven to the house at 5 o'clock in the morning expecting that I would have all arrangements made for a first-class funeral, but he found the patient "sitting up in bed and I was in another part of the house getting some sleep. The malignancy returned in some four months but Mrs. Handy lived something over a year after the operation.

The following day the same operation was performed at St. Mary's upon a middle-aged Irish woman from Bisbee. Every-

thing went along nicely with this case. She soon returned to her home and I know nothing about the ultimate results.

A very few weeks after the surgical week an interesting case came into St. Mary's from Florence—a Mrs. Trimble with a six months' pregnancy complicated with a uterine fibroid about half the size of one's head. There were seven doctors in the operating room; Dr. Goodfellow had invited Dr. Scott Helm of Phoenix. I assume that he was the leading surgeon there. But very soon thereafter—I think it was later the same summer—Dr. Helm was thrown from his horse and killed, in Los Angeles. Dr. M. F. Price, of Colton, who was at that time stationed at Yuma, because of some contagion on the border, was present. Dr. Spencer gave the anesthetic. I have forgotten who the other two doctors were. A rather pathetic feature occurred. When the patient had been returned to her room, the nurses discovered, pinned to her undervest, a note which was to be given to her husband in case she did not survive the operation. She remained at the hospital only a little time and after a short convalescence in Tucson returned to her home.

Those of you who were present at the Chamber of Commerce luncheon, at the time this society last entertained the state association, some six years ago, will recall that when I introduced Dr. Cecil, urologist of Los Angeles, his first words were an expression of pleasure at being in Tucson, the home of Goodfellow, the father of prostatectomy. You will also recall that I was able to throw a little light upon Goodfellow's first two operations, as I had given the anesthetic. This was in the winter of '93. I was no longer assistant to Goodfellow but continued to give his anesthetics. Consequently I lacked the intimacy with these cases that I had had with the former ones.

The first patient for this operation was E. B. Gage, a prominent mining man from Tombstone. Dr. Goodfellow used the scalpel only to get through skin and perineal muscle. All further dissection up to the gland and its enucleation was done by the index finger. In a remarkably short time the gland was delivered intact. It was just about the size of a chestnut and of normal pink color. Some time after the operation I met Mr. Gage on the corridor of the hospital. He was as pleased as a child, stating that he could urinate like a school boy.

Gage had a friend, a prominent attorney in Chicago, named Eames. He was at St. Mary's a few weeks getting ready for the

operation. Conditions were quite different from the first case. Gland was at least two and a half times larger, dark red color and quite friable, about one-eighth or one-tenth coming away piece-meal. After the operation—I think it was during the first night—there was quite an extravasation of blood into perineum and inner aspect of each thigh. This had Goodfellow worried for a while, but it all cleared up.

I gave anesthetic for a few other removals of the prostate. But it is my understanding that it was after Goodfellow's removal to San Francisco, in '96, that he paid special attention to this operation and became one of the leading authorities, as he had been, while here, the pioneer.

A pretty good idea of the status of the profession in the territory may be gotten from the early history of the Arizona Medical Association. This organization was formed one month after my arrival in Tucson, May, 1892. There already existed the Maricopa County Medical Society. At a meeting of this body early in May of that year, it was decided to invite all physicians known to be in Arizona, to meet in Phoenix in the latter part of that month to form an Arizona Medical Association. In response to this call two doctors came from Tempe, one from Mesa, one from Gila Bend, Green from Tucson and Hamilton from Tombstone. These, with ten doctors of Phoenix, participated in the organization. Dr. J. Miller, of Phoenix, was elected president and Dr. J. T. Green of Tucson, secretary. Dr. Dameron became secretary upon the death of Dr. Green. Three of the charter members still practice medicine in Phoenix: Dr. H. A. Hughes (second president); Dr. Ancil Martin (third president) and Dr. L. D. Dameron. (Ed. Note: Drs. Martin and Dameron have since died. Dr. Hamilton, who with Dr. Hughes, are the only surviving charter members of the association, is practicing in Cananea.)

I have no recollection of ever hearing of the organization until December, 1896, when I received an invitation to attend and to read a paper at the meeting the following month. I foolishly accepted both invitations. It would seem that it had taken them five years to learn that I was in Arizona. While Dr. Fenner had joined the Association in '93, yet he had not been present, so I had the distinction of being the second man from Pima County to attend a meeting. I was able to bring the next session, that of 1898, to Tucson—the first time the Association had ever met in the Old Pueblo. It now became the custom to

meet in Phoenix every odd year, during the session of the legislature, and alternating years to meet in Prescott or Tucson. At my first attendance, Dr. Dameron kindly furnished me printed copies of the proceedings and papers from the beginning. So I have heard or read all the papers ever presented in early days. I have been unable to attend only three sessions in twenty-nine years.

First, as to the scientific aspects of those early meetings—the papers read. Probably most of you would consider them rather primitive in one way or another, and they certainly were in numbers. At the organization meeting in 1892, no formal paper was read. In 1893, including the president's address, there were three papers. At the next three sessions there were five papers each. At the time of my first attendance there were about ten. There was quite a lack of personal investigation or research, to which we have become accustomed more recently. But the papers were, without exception, strong, able and helpful.

Those of you who hear at the Arizona Association, some years three or four, other years ten or twelve men of varying prominence in our profession from other parts of the country, may conclude that this has been the custom from the beginning. Far from it. It was ten years after the organization before anyone outside of Arizona appeared upon the program. Dr. Norman Bridge, of Los Angeles, was the first outside guest of the Association—at the second meeting held in Tucson, in 1902. Dr. Bridge was well known over the country as a former professor of medicine in Chicago. Early in his residence on the Pacific Coast he had favorable financial dealings with E. L. Doheny in oil. During the last twenty years of his life he was a trustee of several educational institutions in Southern California and was known as a liberal philanthropist. At the session of 1902 he read a paper on "The Doctor of Today." He prefaced the paper with the following paragraph:

"I have always had a great deal of sympathy for the doctor that lives in the country, away from the great centers of learning and conveniences, because I have always somehow felt that he had a hard time and labored under many disadvantages. I expected to meet over here in Tucson some country doctors, and I suspected that I might meet some who were a trifle old-fogyish, such as I have found in the East in small towns and rural districts, but

I have been greatly surprised. I have found a medical society that is the equal, in its intelligence, in the scholarship of the papers presented, and in the discussions, of any State society that I have ever attended."

This was his rating of the members of the Arizona Medical Association twenty-four years ago.

I might go even further than this. From 1903 to 1907 or 1908, Dr. J. W. Foss of Phoenix was secretary of the Arizona Medical Association. Foss was an enthusiast, particularly of the Salt River Valley—so much so that we called him "Alfalfa." In 1907, I think, he was delegate to the A. M. A. at the meeting in New Orleans. You all know that when the meeting is held in the South, it is some two months earlier than other years. Foss returned from that session about a week before our annual session. He reported that he heard just as able papers read at the Arizona Association as he did at the A. M. A. I rather thought this was some of Foss' enthusiasm. You know the personal equation has considerable to do with one's view of things. But three years later, in 1910, I was delegate to the meeting in St. Louis and, as cold-blooded as I am, I returned just as enthusiastic over the Arizona papers as Foss had been.

I think the most of you would consider the evening entertainments of those early meetings rather primitive. At the first meeting I attended at Phoenix in '97—and again in '99—we were given a dinner at the Insane Asylum. At the first meeting held here, in '98, we had a stag banquet at the San Xavier hotel. That stood about where the express office is at the station. We invited in two lawyers to do the talking: Judge Wright, the father of John B.; and Judge Barnes, the father-in-law of Col. John H. Martin. We had seventeen present.

At our second meeting in Tucson, in 1902, Dr. Fenner entertained us at his home—the southeast corner of Stone and Pennington. Where Dr. Schnabel's office now is, was a fine lawn and we were out there. At this time no visiting physician had thought of bringing his wife, but the wives of the local men were included. A delightful time was had. I recall that Dr. Duffield, a prominent physician of Phoenix, was not present in 1902 but he was at the next meeting in 1904. The first thing he said then was that the Phoenix doctors had not gotten over telling what a fine time they had at Fenner's.

At the next meeting here, Dr. Fenner, who had moved to where Dr. Watson now lives, planned to repeat the former entertainment, on a larger scale. But at the time of the meeting Dr. Fenner was flat on his back with an attack of appendicitis and at the last minute we had to go to the dining room of the Santa Rita. But Tucson has the distinction of first getting away from the early stag function, thanks to the hospitality of Dr. and Mrs. Fenner.

The reason that I have devoted considerable time to the Arizona Association and have hardly mentioned this Society is the fact that the Association antedated the Society by some twelve years. This brings up another phase not yet mentioned. Until the county society became the unit, about 1904, there was no organization whatever to elect delegates to the Association and, consequently, there was no House of Delegates. During that time, all business of the Association was transacted by a Judicial Council, consisting of one doctor from each county, appointed by the president. He appointed the members of the council soon after his election. By the time of the next meeting, nearly a year later, it frequently happened that only half or two-thirds of these identical men would be present and the president had to revise his council by substituting men actually present. For years after I began attending, it made very little difference whether I was originally appointed or not. I usually was; but as I would be the only man from Pima county present I sneaked in. In 1899, when I was president, I appointed Dr. W. B. Purcell on the council and took him with me to the meeting.

For several years after its organization this Society was largely a skeleton affair. Of course, we had to have it in order to have any standing anywhere. We probably had six or eight members, but meetings with an average attendance of only four or four and one-half would not conduce to great enthusiasm. So we held an annual meeting, electing officers and a delegate, and very little more was attempted. As the membership increased, meetings were arranged with some degree of regularity.

I think the greatest change in the medical profession during the past third of a century is the multiplicity of specialties and specialists. This change is more noticeable in Arizona than elsewhere, because of the pioneer conditions existing here at the beginning of that period. Dr. Ancil Martin, eye, ear, nose and throat specialist,

came to Phoenix in 1891. For some twelve or fifteen years he was the only specialist in his line in Arizona. While I do not think Tucson now has more of these specialists to the square inch than other localities—in fact, quite the reverse—yet one can scarcely turn a street corner without running in to from one to a half-dozen of them.

I will close with a recital of an incident Dr. Goodfellow related to me thirty-four years ago. I feel that it is too good to be lost with my passing. He stated that it had been copied into papers all over the country, adding that he had been accused of being the perpetrator.

A man had been hung in Tombstone. The verdict of the jury was as follows:

"We, the coroner's jury of Tombstone, Cochise County, Arizona, find that the deceased came to his death from emphysema of the lungs; a disease common in high altitudes; characterized by an excess of air in the cellular spaces; due to strangulation or otherwise."

THE TYPE OF GASTROPTOSIS DEMANDING SURGERY

HUGH CROUSE, M. D., F. A. C. S.
El Paso, Texas.

Read at the Twelfth Annual Meeting of the Medical and Surgical Association of the Southwest, held at Tucson, Ariz., Nov. 11 to 13, 1926.

Ptosis of the stomach is an actual or potential pathological condition. The oft-repeated assertion that a misplacement of this vital organ is of slight import is untenable. Gastric and intestinal stasis have been proven by Keith¹ to have a neurological basis, instead of an inflammatory origin, as asserted by Sir Arbuthnot Lane². This is interesting when one studies, when one interprets, and when one understands the nerve mechanism of the stomach. The existence of nodal tissues in the cardiac and pyloric ends, demonstrated by Keith and Mackenzie; the elucidation of the intrinsic nerve mechanism of the stomach, by Openchowski³; and the studies of its extrinsic nerve supply—covered conclusively by Cannon⁴, Alvarez⁵, Auer⁶, Borchers⁷ and Klein⁸—when understood and weighed, lead one to feel that pathological changes in these tissues explain many of the odd manifestations of gastric ptosis.

The two leading duties of the stomach are rhythmic motion and secretion. The motility of the stomach is its most important function. A misplacement lessens this, and markedly checks the stomach's secondary work, namely, secretion. Without these two gastric functions operating in

a normal way, local and far-flung symptom complexes develop. Gastric stasis may not be radiologically demonstrable, or chemical analysis of gastric contents show proof of pathological results in gastric misplacements; and yet, the patient presents a clinical complex that resists all forms of therapy until the stomach has been returned, by some mechanical method, to an approximately normal position.

The peristaltic movements of the stomach have been shown by Cole⁹, Alvarez and others, to have a definite systolic and diastolic action. The systolic waves of the stomach, originating in the cardiac end, in circus-like movements, extend along the lesser curvature to the re-entrant angle of the antrum, where they disappear, and where the diastolic waves of the pyloric antrum neuro-muscular structures develop, and peristaltically carry the chyme through the pylorus into the duodenum. As with the heart, Wilkie's¹⁰ recent study of the nerve mechanism of the gall bladder shows the extrinsic nerve supply of this structure has the vagi as an inhibitory or contractile influence, and the rami communicantes of the sympathetic as an acceleratory or relaxant action.

Eppinger and Hess¹¹ advanced the theory that the vagus stimulated the tonus excitability and contractile quality of the stomach, and that the sympathetic system depressed these functions. The two acting together, they called the autonomic system. When there was evidence of increased tonus, it was their opinion that the vagus system dominated, and they denominated the condition vagatonic; and when the opposite condition of tonus existed, they believed that the sympathetic system was in the ascendancy, and they spoke of it as sympatheticonic.

Gradance of rhythmicity, tone, irritability, conductivity and metabolic rates, according to Alvarez, is chiefly responsible for the onward and downward direction of the gastric movements, a nerve phenomenon. The amount of acid chyme that is allowed to enter the duodenum is dependent upon the degree of acidity that exists on the gastric or duodenal side of the pyloric sphincter. This, according to Cannon, is a biochemical action, possibly regulating also the physiological tone irritability of the stomach and first portion of the small intestine.

Various theories have been advanced as to the stimulus that sets in motion the contractile mechanism of the gall bladder, the secretory activities of the pancreas, and the

activities of the mucosa of the duodenum necessary in developing prosecretin and its by-product, secretin. Theories have been advanced that secretin is carried into the circulation and then returns and directly acts upon the pancreas, inducing the flow of its secretion. There is strong evidence that this chyme acidity sets in action the intrinsic nerve mechanism of the stomach, duodenum, and nodal structures of the pylorus and muscles of Oddi, as well as the conductivity nerve mechanism that regulates the flow of prosecretin, whose by-product, secretin, neutralizes, along with the bicarbonate of soda of the pancreatic secretions, the acid chyme in the duodenum. There is theoretic evidence that this acidity biochemically stimulates the conductile action of the nerve supply of the gall bladder and pancreas; and further gives to the intrinsic nerve mechanism of the stomach, the nodal points of Keith at the cardiac and pyloric ends, and the plexus points of Openchowski, the stimulus needed to develop the systolic waves of the cardiac end, and the diastolic movements of antrum, pyloric end of the stomach in a definite, rhythmic rate. (Cole.)

Nerve drags are notorious factors upon nerve functions, particularly their conductivity duties. A fish-hook type of stomach, through the vagus irritations of nerve drag, induces a cardiac symptom leading to heart fault suspicion, when the stomach is the mechanical secretory pathological factor.

There is ample clinical evidence in the form of symptoms and radiological findings to say that the first third of the duodenum—a physiological, movable portion of this important small bowel—never is normal in function or form in gastric ptosis. Its individual secretory structures, and its correlated organs are detrimentally influenced to a pathological degree by stomach misplacements. Paroxysmal tachycardia, Meniere's disease, neurasthenia and the varied forms of auto-intoxication often have, as their etiology, gastric displacement.

Two great forms of gastric ptosis exist. The congenital—the Glenard case, or Stiller asthenic habitus form—and the developmental. The splanchnoptosis index of Becher-Lennhoff is a very diagnostic feature of this type. The distance from the jugulum to the symphysis pubis, divided by the narrowest portion around the abdomen, multiplied by 100 gives the index. A woman supine normally should be 75; standing up, slightly less; a man, practically always under 75. When the index is

80 or above, then you have the classical, congenital type of case. This, coupled with the peculiar debutante slouch, narrow space between the costal margin and ilium, scaphoid upper abdomen, Rovsing sign—the pulsation of the abdominal aorta—narrowed chest, head swung forward, drooping shoulders with skin changes, neuro-asthenic symptomatology, blended together, check the symptom complex needed to complete the story of a classical congenital case.

Inspection is decidedly necessary in the study of this type, palpation accompanying it serving amply, along with the story of the patient, without radiological aid, to make the diagnosis. The developmental type has not the slouch, but does have the headache, cardiac symptoms, colitis, constipation, scaphoid upper abdomen, pulsating abdominal aorta, classical stasis findings, and has a pre-existent story of an operation or an infection within the pelvis, or an obstructive condition of action of the omentum in a hernia.

A secondary type of developmental condition is the one that occurs secondary to pregnancy, where you find a marked diastasis of the recti muscles. This is easily demonstrable by having the patient supine, and requesting her to lift the head up from the table, without the aid of the hands. This will produce a distension of the abdomen, and by laying the hands in the region of the navel, you can frequently pass the hand deeply between the two recti, ample to palpate the various structures within the abdomen.

The inflammatory, or rather, adhesive form of case must be studied radiologically. This type has the findings of a stomach that cannot be lifted back into place. The congenital and diastatic forms practically always will permit such to occur. In other words, it is a result of adhesions or inflammatory conditions. This is the type of case that is of peculiar interest in the presentation of this paper.

The treatment of gastropsis is dietary, medicinal, psychological and mechanical. The dietary treatment is in the form of fat-producing foods. The medicinal treatment is tonics and very frequently, Trouseau's prescription, consisting of extract of belladonna, belladonna folium, aa $4\frac{3}{4}$ grains, and extract of gentian, q. s. to make 30 pills, commencing with one, running up to five or six, given before breakfast each morning. This is for the purpose of dealing with the vagatonic symptoms.

The psychological is the suggestive form of treatment, reassurance to the patient.

Hydrotherapy is really a part of psychology. Spinal douches, Preisnitz compresses, massage, all have a mental influence outside of the skin and nerve stimulus actions.

The mechanical methods may be in the form of rest, the foot of the bed elevated, external support in the form of belts, or surgical intervention. The mechanical handling from a belt angle may vary from the use of the Curtiss, the Aaron, or the belt which I devised about fifteen years ago, which has given me the greatest satisfaction in the average case. The Curtiss belt is out of the question in the excessively emaciated individual.

The type of case in which I am attempting to interest you, is the congenital condition which demands surgery, as well as the diastatic and developmental type of case that necessarily has to have surgery as a correcting factor.

A few years ago, I¹² published a statement that eighty-five per cent of all cases of gastric ptosis were corrected by belts, tonics, psychological handling, and fat-producing diet, and that fifteen per cent alone were surgical. It is now my belief that this is entirely underestimated, and that practically every case of developmental gastropsis, inflammatory or diastatic, with symptom complex ample to urge the patient to present himself for treatment, is a surgical condition. This conclusion has been arrived at through a careful tabulation of all cases under observation for several years, treated by non-surgical means, compared with those surgically handled.

The surgical indication of the congenital type is rarely the hammock-form, but rather, the fish-hook shaped stomach, whose radiological study shows a dilated first third and angulated second third of the duodenum, with a pylorus to the left of the vertebrae. This form is atonic, has a delayed emptying action, and simulates, through duodenal irritative symptoms, appendicitis. The diastatic form with a ventral-hernia-like finding demands not so much gastric support attention as abdominal wall fault surgical correction and post-operative tonic-diet regime.

The inflammatory adhesive fixing type demands surgical rectification, when the chief complaint points, in a symptom complex way, to the abdomen; covering stasis as a lead, with its digestive faults, cardiac irritability, neurocirculatory manifestation, blending into an invalidism condition.

The selection of operative procedure varies with the type being handled. The

diastatic is really ventral hernia procedure. A few, yet very important digestive physiological actions of the stomach in its correlated service, must be weighed in surgically intervening in gastropotosis. The respiratory movements of the stomach are a great factor in its normal secretory duties. The fixing of a stomach to the abdominal wall, as in the Rovsing operation, or utilization of the omentum in creating a basket support, as advocated by Coffey, neutralizes its needed respiratory movement. Beyea's pleating of the gastrohepatic omentum avoids such ventral fixation, yet fails frequently to correct ptotic stomach fault, due to the thinness of the omental structures used.

Additional endothelial substances and other tissues are demanded to blend with this deficient structure to secure an adequately strong stomach support. The only available near material is the function-obsolete falciform ligament. If one, on opening the abdomen, does so by making the incision as in doing the Bevan hockey-stick method, high in the epigastrium as a starting point, then sweeping to the right amply to enter through the middle of the right rectus, one will avoid the falciform ligament. On opening the peritoneum, this defunct structure can be readily found by sweeping the index and second finger down to the intra-abdominal navel dimple, then hooking the round ligament which carries the peritoneal wing, the two blended making the so-called falciform ligament. Catching with forceps—the Allis form is best—the wing and round ligament together, in the meantime the assistant rolls outward the left abdominal wall part of the incision; a full view of the entire structure is thus developed. Dragging on the Allis forceps until tension demonstrates the falciform in its entirety, but little difficulty develops in, first, scissors-snipping of the navel end, and then dragging and urging out the left wing portion, snipping while dragging, until the entire peritoneal wing and round ligament portions are separated from the abdominal wall, care being taken to avoid the detachment of the liver and diaphragmatic portion. If broad, no need of splitting exists. If narrow and thick, such must be done. The ligament then should be wrapped in warm saline gauze and pushed aside. Next, do the Beyea pleating technique on the gastrohepatic omentum. Use 20-day No. 1 or 30 to 40 day No. 0 chromic gut. Have both ends of gut threaded on curved needles, or preferably one needle curved, the other straight. The first, utilize in the pleating work; tie, but do not cut either strand.

Have them long. Four to five pleating sutures are needed. Tag each suture, the two strands in one forcep. Start at the cardiac side of the stomach. Take great pains not to angle the duodenum in putting in the last suture. Let your tagged sutures lie down over the anterior abdominal surface of the stomach, each numbered and classified—No. 1, No. 2, etc. Lay the raw surface of the falciform ligament down on the pleated gastrohepatic omentum, spreading smoothly. Pass No. 1 pleating suture, both strands, approximately one cm. apart, through the spread ligament well above its inferior margin, tie and cut. Repeat to the entirety of pleating sutures, as with No. 1. Tack the inferior margin of the falciform to the anterior stomach wall as far from the lesser curvature line as possible. I prefer No. 0 or 00 for the tacking suture.

This method of surgically correcting gastric ptosis has been used by myself, Kellogg of New York and others for several years. It has proven ninety per cent successful in forty-eight personally dealt with cases. No surgical technique is letter perfect.

The medical man who wishes to weigh all elements at fault in producing the symptom complex, which gave the patient the urge to seek a physician's aid, should consider gastric ptosis when found as a potential, pathological entity. The customary "laissez faire" medical attitude, of gastric misplacement being of little import, should be avoided.

For references, see next issue.

A COMPARATIVE STUDY OF ARTIFICIAL AND NATURAL LIGHT

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Read at the Twelfth Annual Meeting of the Medical and Surgical Association of the Southwest held at Tucson, Arizona, Nov. 11 to 13, 1926.

There is a mass of literature that has accumulated in the past few years, dealing with both sunlight and artificial light. Rollier's enthusiasm for sunlight has been reflected throughout this country, and artificial light has been pushed with great zeal. However, very few observers have recorded anything of a comparative study.

The influence of ultra-violet light upon metabolism, particularly on calcium phosphorous balance, upon the blood picture from every phase, even to the extreme that radiant energy is absorbed by the blood stream, has been recorded by research workers. Such biochemical observations are interesting, but remain as yet in the experimental class.

Gauvian¹ says: "Though light treatment

has been extensively scientifically investigated, * * * * it should be remembered that it owes its origin to shrewd clinical investigation and its justification to clinical experience."

We are limiting this discussion to clinical observations alone, and avoiding all clinical changes not proved directly attributable to light. This practically limits us to skin changes. Even in skin changes temperature, humidity, air and air motion may be influential factors, yet all agree that light does affect the skin. It is further agreed that skin changes offer the most accurate index to the favorable or unfavorable influence of light on the general health.

The relationship of the skin to health is best understood when we take into account its several functions. Sutton's² textbook shows the skin as the blanket of protection, as the heat regulator, and as an organ of secretion, excretion and absorption. He takes the arbitrary stand that pigment is a protection against the penetration of light to the deeper structures, and fortifies his position by a long list of dermatologists in his references. In that case light is an enemy to those structures below the skin and its favorable influence on physiology is forcing the organism to fortify itself with a primitive skin, self-sufficient as a protector.

OBSERVATIONS

Five groups of cases were studied in an effort to arrive at some comparative conclusions of artificially generated ultra-violet light and sunlight. The patients in all groups studied were inmates of the same sanatorium, the same lamp and technic and the same solariums serving all. We will not detail the selection of cases here.

Group 1. In Group 1 the cases were given progressive doses of light on alternate days from a mercury vapor lamp. The dosage was regulated so that there was a slight erythema three or four hours after the radiation. The lamp was in a dark room so that no light other than that generated by the lamp struck the nude patient. He was kept clothed at all other times. The result of a few weeks' treatment was a dry, toneless, desquamating skin, showing no blush of increased capillary circulation, and of a dirty grayish hue with little, if any, increase of pigment deposits. The dry epidermis could be easily crimped from the corium.

Group 2. Group 2 received radiations of the ultra-violet light combined with a daily air bath. For the first three to six weeks they received only the air bath, pro-

gressive exposures on the open porch until two hours daily were taken. The direct rays of the sun were never allowed to bathe these patients. At the end of such a period there were important skin changes: the epidermis seemed to lose its excess of dead cells, a distinct blush due to the increased capillary circulation seemed to come to the very surface, there was an increase in the tone of the skin, it being harder to crimple the epidermis on the corium. The skin seemed deep, elastic and distinctly oily. There was a slight increase in pigment. At this stage lamp radiations were started, using the identical technic as with Group 1. The skins began to pigment rapidly; did not get dry or desquamate; in fact, the favorable changes as noted above became daily more pronounced until a deep, soft skin with at least a second degree pigmentation was attained.

Group 3. Patients were given direct sunlight according to the Rollier technic. Most cases developed favorable skins as evidenced by softness, increased tone, increased capillary circulation, depth and pigment. A few developed pigment, but not the favorable changes of the majority. A few patients of low vitality developed sun sickness the first few weeks. At the end of a six months' period these patients had attained at least a third degree pigment, a deep skin with tone so increased that it was impossible to crimp the epidermis on the corium. Over most of the body it was soft and glistening, due to the noticeable oil in the skin. On a scaling of four, these patients would classify as third and fourth degree, while Group 2 would classify as second degree.

Group 4. Group 4 was composed of a few cases that had attained at least a third degree pigmented skin under sunlight. They were suddenly withdrawn from sunlight and an attempt was made to hold their skin changes with the quartz lamp alone. The pigmentation rapidly faded, the skins became dry, toneless and desquamating.

Group 5. Group 5 was made up of patients on full sunlight with skins of third degree, or more, who discontinued insulations and resorted to air baths and quartz lamp radiations. They faded to possibly a second degree of both pigment and texture.

CONCLUSIONS

1. The artificially generated ultra-violet light produces a dry, blanched desquamating skin with apparently no circulatory changes, and produces little, if any, increase in pigment deposits. The tonicity and depth of the skin seems affected adversely. Freiberg's³ conclusions, that the ultra-violet light

fails to produce true pigmentation, correspond with our own.

2. The air bath will produce what we style the pre-pigment changes of the skin. The skin becomes softer, oily, deep, and has a blush that shows increased capillary circulation. There is an increase in tonicity and slight increase in pigmentation. The term pre-pigment does not accurately describe what we are attempting to convey, for, in truth, there is some increase in pigmentation, but our observations are that these other skin changes are absolutely essential before sufficient light can be applied to rapidly increase the pigment. Skin, by intensive heliotherapy, can be pigmented without these other skin changes, but to the detriment of both the skin and the general health. Our conclusions are that the air bath is nothing more than a modified sun bath, nearly devoid of ultra-violet rays. Therefore, when proper dosage of artificially generated ultra-violet light is added to this modified sun bath we are administering the entire sun spectrum in a modified intensity. We believe that those clinicians who feel that they are getting skin pigmentation from the quartz light alone are, in truth, getting it because their patients are receiving uncharted air baths. LoGrasso' emphasizes the necessity of providing sufficient air in the room in order to approximate open air conditions when the light is administered.

3. The most potent light energy is sunlight, and the sunlight most effective in therapy is that of the entire spectrum. Rollier' states that intensity is as important as a sunlight rich in the ultra-violet end of the spectrum. Therefore, the sunlight of highest therapeutic value is one rich in ultra-violet rays and one of the greatest available intensity.

4. Those skins showing the most marked changes are cases receiving sunlight alone.

5. Sunlight of great intensity is too violent to be practical in low vitality cases.

6. In those cases able to secure marked skin changes, such as we record, the general physical changes are for improvement

CONCLUSION AS TO TECHNIC

These conclusions have led us to formulate the following technic, which we have adhered to for the past six months with satisfactory results: We start the patient on daily air baths until we secure the skin reaction which we term pre-pigment. The patient is then placed on the combined air bath and quartz light radiations. We have found no patient unable to take these exposures, no doubt due to the fact there is

an absence of depleting heat rays. When the skin changes have progressed to the second degree and the patient is reacting favorably in a general way, the air bath is gradually replaced by the sun bath. As we progress with the sun baths, we gradually shorten the quartz lamp exposures until finally the patient has been built up to the full daily sun bath.

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NOTES ON THE ETIOLOGY OF BRONCHIAL ASTHMA OCCURRING IN THE TUBERCULOUS

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In the light of recent investigations, from an etiological point of view, two groups have to be distinguished among the cases of bronchial asthma: (1) the allergic, (2) the non-specific. To the first group belong the cases of allergic nature; to the second group those in which hypersensitiveness to the various asthmagenic substances cannot be demonstrated. Statistical studies have shown that cases developing at or before adolescence are mostly allergic; those developing in the later years are rather non-specific. In this connection we must not forget that the term bronchial asthma is still very loosely applied to various forms of paroxysmal dyspnea, so that we may safely assume that quite a number of cases are erroneously classified as asthma.

We have collected in this hospital in the last few months twenty cases diagnosed as bronchial asthma.

The study of the records of these cases reveals the following:

Anamnesis: The age of the patients varied from twenty-nine to forty-nine years. The duration of the asthmatic symptoms at the time of hospitalization varied from one-half to twenty years. Eight gave a history of pneumonia, and the same number, of an attack of influenza. Five were gassed during the World War and one worked with gas fumes during his training. Only one man claimed that he had the attacks in his

childhood up until his seventeenth year, when the attacks ceased, to appear again at the age of twenty-two. Two patients stated that a member of their family is also afflicted with asthma. Five stated that they are suffering from hay fever in addition to asthma. Eight claimed that inhalation of dust produces a slight attack; four, that they experience an attack in rainy or cloudy weather; two, from being around horses or dogs; two, from eating sweet or seasoned food; two, from eating a heavy meal; one, from working around oil meal; one, from eating or smelling beans or bananas; and, finally, one from eating very cold or very hot meals.

The physical examination revealed chronic pulmonary tuberculosis in sixteen of these cases, ten of which had a positive sputum. Nine had, as complications, chronic bronchitis and emphysema; three, chronic bronchitis; one, endocarditis; and one, tertiary syphilis. Deviation of the nasal septum to a more or less marked degree was found in eleven cases; nasal polyp with infection of the ethmoidal cells, and marked deflection and a spur of the septum, in one case; and a perforated nasal septum, in one case.

The routine radiogram showed enlargement of the hilum shadows and thickening of the bronchial trunks in all the twenty cases. In addition to that, it disclosed in the case of a miner a marked pneumoconiosis; and an intrathoracic tumor in another case.

The routine blood examination revealed the number of eosinophiles as varying from one to four per cent.

The skin test for the various allergens was performed with commercial group allergens in fifteen of these cases. In some of the cases this test was repeated in our institution, it having been found negative prior to their admission. Only one case, and this a tuberculous patient, gave a definitely positive reaction; two gave slightly positive reactions and one was found who had reacted against tuberculin and flour previous to his admission.

Considering the negative results with the allergen tests, it was thought that the asthmatic attacks might be caused by some pathological change in the mediastinum, and in each case the posterior mediastinum was studied under the fluoroscope. In fourteen cases the posterior mediastinum was not transparent. The radiogram taken in the right oblique position showed a definite nodular mass in nine cases, all of which belonged to the tuberculous group; the haziness was uniform and its nature could not

be definitely determined in the remaining five cases, three of which belonged to the non-tuberculous group.

There are a number of interesting cases in this series, of which we desire to report the following three:

Case No. 1. C. I., 36 years old, white, a clerk, was admitted April 1, 1925. Anamnesis: He had pneumonia in 1920 and has suffered from asthma since the end of the same year. He has had tuberculosis since 1921. He was treated in different hospitals and tested for the various allergens and was found to react to flour and tuberculin. Flour products were excluded from his diet for three months, but he noticed no change in his condition. Later he was treated with tuberculin, from which he had severe reactions, so that the injections had to be discontinued. Artificial collapse of the right lung was resorted to, but his condition became decidedly worse, so that this kind of treatment also had been discontinued. Polyps were removed from his nose and the turbinates were cauterized at various intervals, which treatment gave him temporary relief. Adrenalin always relieved him promptly from his attacks.

Physical examination on admission revealed: (1) chronic, moderately advanced, active pulmonary tuberculosis; (2) bronchial asthma; (3) deviation of the nasal septum, nasal polyp, spur of the septum and ethmoiditis on the right side.

The sputum was positive for tubercle bacilli.

Clinical course in the hospital: In the beginning, the patient had asthmatic attacks of moderate degree lasting for about one-half to four hours. On windy and rainy days the attacks were more disagreeable. Later the attacks became more severe; and even when the paroxysms of the attacks were relieved by adrenalin, he remained dyspneic for hours afterward. An x-ray plate taken in the right oblique position on May 19, 1925, showed a very dense thickening of the posterior mediastinal glands which had the appearance of having undergone some calcification.

Believing that the treatment of the focal infection maintained by the ethmoiditis and the removal of the nasal obstruction caused by the polyps, might give relief, the ethmoids were curetted on June 22, and the polyps removed on June 27, 1925. Recovering from the operation, the patient seemed to be improved for a few weeks, when he again started to have his attacks. Five c. c. of a five per cent calcium chloride solution were given intravenously for a few weeks without any noticeable effect. From September 9, 1925, to September 16, 1925, the patient had fever, the daily maximum ranging around 39 degrees C. During this febrile period his tuberculous condition was markedly progressive. The x-ray plate taken on September 18, 1925, showed increased infiltration and an area of softening, undergoing cavity formation, in the right apex, which change could not be seen in the plate taken six weeks previously. During this febrile period the patient had no asthmatic attacks, and, except for a slight general malaise, he felt more comfortable than in previous period. Since this time, the patient has had repeated febrile periods during which he was always relieved from the asthmatic attacks.

Case No. 2. W. L. W., aged 40, was admitted November 12, 1924. Diagnosis: (1) chronic, advanced, active pulmonary tuberculosis; (2) syphilis, tertiary; (3) chronic bronchial asthma; (4) slight deflection of the nasal septum.

Tubercle bacilli were found in the sputum.

The Wassermann test showed a four-plus reaction with three antigens.

Physical examination revealed, besides the find-

ings of a tuberculous process, coarse rales of wheezing type, both expiratory and inspiratory, throughout both lungs, especially marked at the base.

The radiogram in the anteroposterior view revealed the hilum shadows to be markedly increased on both sides, containing, especially on the right side, numerous small and large calcified areas, and the bronchial trunks, especially those toward the base, to be considerably thickened. The x-ray findings, in connection with the positive Wassermann reaction, pointed toward the possibility of a luetic lung lesion.

The findings of the x-ray plate taken in the right oblique position were as follows: "The posterior mediastinal space shows a dense area, extending from the level of the 5th to the 9th dorsal vertebra. The shadow is apparently nodular and is probably due to enlarged posterior mediastinal glands. There are also noted numerous small discrete areas of density lower in the mediastinal space, which are probably due to small calcified nodes."

The patient was more or less short of breath at all times, and had paroxysms of dyspnea of the expiratory type, mostly at nights. His condition was markedly influenced by changes in weather. He was given very intensive antiluetic treatment without any effect on his asthma. Iodides were tried in increasing doses from one gram (fifteen grains) daily to three grams (forty-five grains) daily for three months, but no change was noticed in his condition. Intravenous calcium chloride administration for three months did not influence his asthma attacks; but prompt relief was obtained by the administration of atropine sulphate at the time of the paroxysms.

Case No. 3. R. W. R., aged 45 years, white, miner, was admitted to the hospital Dec. 22, 1925.

Physical examination revealed: (1) chronic, far advanced, active pulmonary tuberculosis; (2) chronic emphysema with asthma; (3) severe pneumoconiosis.

The sputum was positive for tubercle bacilli. The x-ray plate taken in the right oblique position showed uniform dense haziness in the posterior mediastinal spaces.

From February 1 to February 3, 1926, the patient had very severe asthmatic attacks. On February 3, he expectorated two large broncholiths, which expectoration was followed by a slight hemorrhage. Since the expectoration of these broncholiths, there have been no asthmatic attacks.

COMMENT

Reviewing our findings in this series, we may attach some etiological significance to the frequency of pneumonia in the history of these cases. Pneumonia, by causing an enlargement of the hilum glands, may leave some permanent damage at the root of the lungs, where the vagi are distributed into the lungs; and these nerves, as will be shown later on, have some part in the development of asthmatic symptoms.

Two out of the six cases, who give a history of having been gassed, were sick continuously after the gassing had occurred, and were discharged from the army on S. C. D. because of bronchial asthma. We can assume, therefore, in their cases, that the gassing played some part in the etiology of their disease. One of these cases showed also an enlargement of the tracheobronchial glands. In the third case, the

one who worked with gas fumes during his training and who had to discontinue training on account of the development of bronchial asthma, an intrathoracic tumor was afterward detected. This case shows clearly that gas fumes may elicit attacks in individuals who are predisposed to asthma.

In eight of these cases, notwithstanding the negative allergen tests, it is evident from their history (the coincidence of hay fever and the aggravation of their condition under the influence of the various asthmato-genic substances) that these individuals suffer from some form of protein hypersensitiveness.

The percentage of cases in this series showing some pathological change in the nose (thirteen cases) is rather large. From reading the various studies dealing with the relation of nasal diseases to bronchial asthma, it is difficult to arrive at a clear conception concerning the role nasal diseases play in the etiology of bronchial asthma. Instead of discussing this phase of the problem, we wish only to state that in the case in which the patient was relieved from his nasal obstruction and nasal focal infection, there was no material change in his asthmatic condition.

It is difficult to evaluate the etiologic significance of emphysema and of bronchitis. It is well known that bronchial asthma is often followed by emphysema and bronchitis as secondary conditions. On the other hand, bronchitis and emphysema may produce asthmatic attacks in certain individuals. In some instances, however, as in one of our cases, it will be found that in clearing up the symptoms of bronchitis, the asthmatic condition will also improve. In these cases we may assume that the bronchitis was the primary factor in the development of the asthmatic symptoms.

The enlargement of the hilum shadows and the thickening of the bronchial trunks is a common roentgenological finding in cases of bronchial asthma. However, that these changes are not the primary factor in the development of bronchial asthma is evident from the fact that, while they are nearly always present in pulmonary tuberculosis, yet the occurrence of bronchial asthma in connection with tuberculosis is relatively rare.

The same cannot be said of the enlargement of the posterior mediastinal glands, the tracheobronchial adenopathy, which we found in such a large percentage, nine out of twenty cases, in our series. Desiring to compare the frequency with which tracheobronchial adenopathy occurs in non-asth-

matic individuals, we studied under the fluoroscope a series of twenty non-asthmatic cases, five non-tuberculous and fifteen tuberculous individuals, in various stages of the disease. In this series we found the enlargement of the posterior mediastinal glands in only two tuberculous individuals, ten per cent against the forty-five per cent found in our asthmatic series, and in only one was the posterior mediastinum uniformly hazy.

The large percentage of tracheobronchial adenopathy in our asthmatic cases would point toward the possibility that tracheobronchial adenopathy plays a greater part in the etiology of bronchial asthma than usually recognized. This assumption gains in weight when we consider the fact that the first symptom of a mediastinal tumor is very often an asthmatic attack. This assumption is further in corroboration with the theory of those who maintain the view that the asthmatic attacks are produced by a spasm of the bronchial muscles due to an irritation of the vagus. We may assume that the enlargement of the tracheobronchial glands increases the irritability of the vagus and so has some part in the etiology of bronchial asthma.

However, that the observed tracheobronchial adenopathy is not sufficient in itself to produce asthmatic symptoms, is evident from the fact that we found it also in two of our non-asthmatic cases.

In the tuberculous, asthmatic attacks may be produced by marked fibrosis. As we assume that in case No. 2 the asthmatic attacks were partially due to the marked fibrosis.

It is worth while to dwell on the peculiar observation made on case No. 1, in which instance the asthmatic attack ceased in the febrile period. Some explanation for this phenomenon can be found in the observation of Longscope, who found "that in animals sensitized to two proteins, anaphylactic shock to the one reduces temporarily the sensitiveness to the second." In our case, when the patient was most sensitive to the tuberculoxin as evidenced in the high fever, he lost his sensitiveness toward the protein causing his asthmatic attacks. The same phenomenon was observed in another case, who is relieved from his asthmatic attacks at the time his temperature rises above 37° C.

Case No. 3 illustrates the fact that the diagnosis of bronchial asthma is very often based purely on symptomatology and not on etiological considerations.

We may exclude from this series the case

in which the diagnosis of bronchial asthma was made in connection with chronic endocarditis. The detection of a cardiac lesion is, in itself, sufficient to account for the attacks of paroxysmal dyspnea, and, in absence of protein hypersensitiveness, we have no means of determining that in these cases the asthmatic attacks are not due to heart failure.

Considering the points brought out in this study, and reviewing the literature on the subject, it is obvious that the occurrence of bronchial asthma cannot be traced back solely to one factor. Individuals with protein hypersensitiveness (cases of hay fever, urticaria, angioneurotic edema) do not always present asthmatic symptoms. As we do not find that pathological changes in the posterior mediastinum would always produce these symptoms. Whether, besides the known etiological factors, we have to consider only the constitution of the individual, or whether we have to seek for further extrinsic factors in the etiology of bronchial asthma, must be left to further investigations on the subject.

SUMMARY

(1) Bronchial asthma is a symptom complex and not an etiological disease entity.

(2) In a series of twenty cases of bronchial asthma in nine cases a definite tracheobronchial adenopathy, and in five cases an abnormal posterior mediastinum, was revealed by the x-ray study, and it is assumed that this pathological change plays some part in the etiology of bronchial asthma connected with pulmonary tuberculosis.

(3) The roentgenological examination of the chest, especially that of the posterior mediastinum, therefore, cannot be neglected in the study of the etiology of bronchial asthma.

I wish to acknowledge my indebtedness to Dr. S. B. McFarland, Roentgenologist of this Hospital, whose cordial cooperation made possible this study and to whom the credit is due for the x-ray interpretations referred to in this paper.

I also wish to thank Dr. D. Kramer, Receiving Officer of this Hospital, whose physical examinations and findings were utilized in most of the cases.

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CHRONIC PANCREATITIS CASE REPORTS AND ROLE OF MUMPS AND MEASLES

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Read at the Medical & Surgical Association of the Southwest, Tucson, Ariz., Nov. 11 to 13, 1926.

ETIOLOGY

Infection of the biliary tract is the most common cause of pancreatic disease. Deaver reported 79 cases of chronic pancreatitis at the Lackenow Hospital and 72, or 91 per cent of them, showed evidence of biliary infection; 42, or 53 per cent of this series, had calculi; while 30, or 38 per cent, had no calculi.

W. J. Mayo reported that 90 per cent of their cases having acute and chronic pancreatitis had been operated for infected gall-bladder, usually with stones.

There is little doubt, according to Opie, but that chronic pancreatitis may follow cholelithiasis, even though no occlusion of the pancreatic duct has been caused by calculi, and may result from inflammation of the duct of the pancreas accompanying similar inflammatory changes in the biliary system. Regurgitation of the contents of the duodenum coincident with a relaxed sphincter of Oddi, or regurgitation of infected or non-infected bile—caused by the lodging of stone or other mechanical obstruction at the exit of the common bile duct—may result in ascending infection of the pancreatic duct and infiltration of the pancreas with bile, and, in time, chronic inflammation.

Mann and Giordano state that chronic contraction of the sphincter of Oddi may cause chronic pancreatitis in rare cases. Hoppe-Seeler and Fleiner have reported cases of chronic pancreatitis which they believe to have been caused by arteriosclerosis. They state that the pancreatic lesion is analogous to the contracted kidney of arterial disease.

Infection from the blood and lymph supply seems abundantly proven. According to Opie, such infections may have their origin in an attack of influenza, typhoid fever, appendicitis or syphilis.

DIAGNOSIS

Chronic pancreatitis may, or may not, be initiated by acute symptoms, such as occurred in Case 4. The most important are those of disturbed function. The chronic interstitial form results in diabetes. The

chronic interlobular form causes disturbed pancreatic digestion.

The custom of having patients bring early morning specimen of urine for examination, often leads to error in diagnosis. Urine sugar reaches its highest point some two hours after the heaviest meal of the day. An early morning specimen is desirable, but a specimen passed two hours after the heaviest meal of the day should be examined for sugar. Merely finding sugar in the urine is not sufficient. The blood sugar level should also be obtained. It is often sufficient to obtain a specimen of blood before the patient has had breakfast in the morning. At this time the presence of blood sugar above 170 mg. per 100 c.c. is distinctly abnormal.

Many times a small quantity of sugar is present in the urine with a normal blood sugar, which indicates the relatively harmless functional disturbance called renal glycosuria. A fasting blood sugar within the normal limits is not positive proof that at times the blood sugar may not rise above normal. Cases having sugar in the urine and a normal blood sugar should be given a glucose tolerance test. The diabetic pancreas does not secrete enough insulin to keep the blood sugar from rising to an abnormally high level.

MICROSCOPIC EXAMINATION OF STOOLS

The passage of several large stools a day, without signs of intestinal disease such as blood and mucus, points strongly to pancreatic disease. The stools are usually not watery. In tropical sprue and tuberculosis of the mesenteric lymph nodes, the large fat-containing stools resemble those of pancreatitis. In obstruction of the common bile duct, if there is much fat in the diet, the stools may resemble those of chronic pancreatic disease. The light color of the feces is significant. If the amount of fat is large, the stool is almost white. The stools of jaundice are also fatty. Here it is possible to establish the presence or absence of bile by appropriate tests. Pfeilson observed abundant microscopic fat in five out of six cases of pancreatic disease in which the pancreatic duct was obstructed. He points out that the stools should be examined frequently while the patient is on a diet rich in fats, preferably in the form of butter, cream, or olive oil.

The finding of great numbers of fat globules in the stool when the patient is on a standard Schmidt diet, is always suggestive of pancreatic disease. In the fatty stools of obstructive jaundice, bile is absent and the fat is present, chiefly in the form of fine, sharp crystals of fatty acid. Undigest-

ed meat fibers are not, as a rule, so numerous in chronic diarrhea as in chronic pancreatitis. In ordinary diarrhea the stools are watery. In pancreatitis the stools are bulky and pultaceous. In ordinary diarrhea the passage of food through the alimentary tract is short, while the time is usually normal in pancreatic disease.

TEST OF PANCREATIC FUNCTION

The examination of stools following the Schmidt test diet is helpful in determining the efficiency of the pancreas. Other tests, such as Einhorn's test for estimating the amount of the three pancreatic ferments, Bassler's test for estimating quantitatively the amount of amylase, and the determination of the amount of diastase in the urine by the method of Wohlgemuth, all aid in the diagnosis.

DIFFERENTIAL DIAGNOSIS

Carcinoma. Carcinoma of the pancreas was first made a distinct clinical entity by Chauffard and Furge. They noted: (1) digestive disturbance; (2) deepening jaundice; (3) loss of weight and strength; (4) the presence of a distinctly distended gall bladder; (5) pain in the epigastrium. It has been observed that this disease usually occurs in persons of middle age. Jaundice associated with a large palpable gall-bladder indicates malignancy. Jaundice not associated with a palpable gall-bladder usually indicates cholelithiasis. Chauffard especially emphasizes that the pain which occurs when the carcinoma is in the body of the pancreas has characteristic features which the pain of other abdominal lesions does not possess. The pain he describes as starting under the left costal margin working toward the epigastrium, deeply situated, sometimes more severe in paroxysms, and producing a corset constriction sensation most nearly resembling tabetic crises. In the routine examination of the pancreas, Jesser found sugar in the urine in only four out of ninety cases.

Syphilis of the Pancreas. Lindborn reports seventeen cases of syphilis of the pancreas in adults. Ages varied from twenty-eight to sixty-three years. He distinguishes three forms: chronic indurative, gummatous, and a sclero gummatous form. He rarely observed syphilis alone, and most frequently it was coincident with hepatic syphilis. The symptoms were pain—mild, or intense like hepatic colic, and independent of meals,—dyspepsia, nausea, vomiting, loss of appetite, and eructations. Icterus was usually present. Cases subjected to anti-syphilitic treatment responded promptly.

Duodenal Ulcer. Kemp describes a case which simulated pyloric ulcer with pyloric

stenosis. Operation disclosed a dilated stomach with partial stenosis of the duodenum from pressure of an enlarged head of the pancreas. The entire pancreas showed evidence of chronic pancreatitis. There were no gall stones in the common duct or in the gall-bladder. The gall-bladder was drained and the patient recovered.

Inflammatory Tumor of the Pancreas.

There are several cases on record like the two reported by Klinkert in which the intense jaundice and puritis were apparently explained by a hard tumor felt in the pancreas. The surgeons, operating after inspection and palpation, diagnosed cancer of the head of the pancreas. Klinkert, on the basis of the preceding cholecystitis and urobilinuria, urged an anastomosis between the gall-bladder and stomach. Both of these cases recovered after the anastomosis and it is justifiable to assume that the tumor of the pancreas in each case was a secondary inflammatory process and disappeared when clinically normal conditions were restored in the biliary apparatus.

CASE REPORTS

I wish to submit to you, in brief, four cases, each representing a different type of pancreatitis.

Case 1. Pancreatitis Following Chronic Gall-Bladder Disease. Recovery.

Mrs. J. W.; aged 57; housewife. Chief complaint: Severe abdominal pain, nausea and vomiting. Past history: At age of 43 years she had an abscessed appendix which ruptured through the vagina. Ten years later she was told that her chronic indigestion of many years' standing could probably be relieved by the removal of the appendix. But its removal did not relieve her. General examination of this patient was negative except for marked muscular rigidity and tenderness over the upper right quadrant of the abdomen. Leucocyte count 15,000; polymorphonuclears, 80 per cent. A working diagnosis of chronic cholecystitis with gall stones, was made by her attending physician, on February 7th. The symptoms of nausea, vomiting and pain in the gall-bladder region continued until February 11th. On that day it was noted in the progress report that she had severe pain beginning in the left flank and radiating around under the left costal arch. The pain was described as being deep and lancinating in character. At this time the leucocyte count rose to 19,600. Local tenderness and muscle spasm became more marked under the left costal arch. A diagnosis of probable acute pancreatitis was made. An operation was urged but refused by patient and her husband. It was desired that she be treated expectantly until she was able to return to her home in Philadelphia. Daily intermittent biliary drainage was given by means of the duodenal tube. A week later the patient had greatly improved. Tenderness over the gall-bladder had practically disappeared. The leucocyte count and temperature had reached normal. She returned home and her Philadelphia surgeon reported as follows: Biliary drainage by the duodenal tube method was continued for three weeks. She was operated about six weeks after the onset of her illness. The gall-bladder was found to be normal in size and appearance. The common duct was not obstructed (no jaundice). Pancreatic duct tremendously enlarged, and completely blocked.

Great amount of fat necrosis everywhere. Gall-bladder opened and four stones removed. The gall-bladder was not removed. Large stone was removed from pancreatic duct. Sufgical drainage was maintained for six weeks. Patient left hospital at end of eight weeks.

In this case the inflammation of the pancreas did not produce sufficient destruction of the gland tissue to cause permanent functional disturbance. Patient reported recently that her health had been perfect since the operation. It is probable, of course, that a low grade chronic pancreatitis existed for a considerable period before her acute attack.

Case No. 2. Pancreatitis Following Gall-Bladder Disease. Partial Recovery. Mrs. T. M. R., age, 52 years; married. Family history irrelevant. Husband and two children in good health. Past history negative. History of present complaint: In 1917 patient began to feel badly, tired easily, had a slight rise of temperature and, occasionally, slight jaundice. Her blood pressure rose to 220 systolic, and she had several nasal hemorrhages. There was much bloating and distress after meals and, at times, loose bowels. These symptoms continued with more or less regularity until 1921. At this time her weight was 185 pounds, her systolic blood pressure 180, and she had developed a systolic murmur at the apex of the heart. She complained constantly of distress in the upper abdomen. There was icterus of the conjunctiva but the skin was not jaundiced. A diagnosis of chronic cholecystitis was made and operation for removal of the gall bladder was advised. After removal, the gall-bladder showed evidence of chronic inflammation and thickening but not stones. During convalescence her blood pressure dropped to 140 systolic but the digestive disturbance continued. The distress in the upper abdomen became more marked and there were copious light colored stools containing a large amount of fat. Examination of the stomach contents at this time, after a test meal, showed the acid and ferments to be present in about normal amounts. Varicus treatments were tried with but little success. The patient continued having distress and losing weight. Finally, on large doses of pancreatin and calcium carbonate with restricted diet, the diarrhea was controlled. At the present time, (five years later) her health is fairly good, although her diet is limited. The heart murmur has disappeared and the blood pressure is 130 systolic. Here the damage to the pancreas was evidently excessive and will be more or less permanent.

Case No. 3. Pancreatitis Following Mumps. J. R. D.; single. Family history negative. Personal history negative. Complained of severe pain in the left upper abdomen, with fever and chills. The evening before entering the hospital he had retired, after a light supper, with a feeling of uneasiness in the upper left abdomen. He had some distress, off and on, all night. About 4 a. m. he was awakened with severe pain in the epigastrium, accompanied by a chill, and continued suffering great pain for some three hours. He was not nauseated, did not vomit, and when examined, about 10 a. m. he was still suffering with pain under the left costal arch. There was considerable tenderness extending across the left upper abdomen. Leucocytes, 12,000; polynuclears, 80 per cent. The pain and fever gradually subsided and after two or three days it was noted that he had marked glycosuria. On the fourth day of his stay in the hospital he complained of a swollen testicle. Until then there had been no suspicion of mumps. He had not thought of it himself. On close questioning he was reminded, however, that about ten days previous he had had

temporary soreness on one side of the face and slight stiffness of the jaws, but he was very busy and did not stop work. During the time of the most acute pain in the upper abdomen, patient had a temperature of 103 to 104.2, but during the three days just prior to the onset of the orchitis, the temperature had not gone above 99. The onset of the orchitis was not accompanied by elevated temperature.

Farnam recently reviewed the literature of pancreatitis following mumps. The occurrence of simultaneous disease in the parotids and pancreas has been commented on by many of the older writers. Some cases of parotitis accompanied by orchitis, have been reported. Smachpfeffer reported one case in 1817; Thomas Sewall one in 1814. In 1836 one case was reported by Andrel and one by Roborta. Fabre, in 1887, reported four cases in which he believed the pancreas to have been involved. Altogether 119 cases have been described in medical literature, in which the authors claim to have observed pancreatitis following mumps. Urine examinations were reported in only a few cases. Sugar was found in only two cases of the twenty-three in which the urine was examined for it. It is stated that only rarely does the pancreatitis become fulminating and require operative treatment.

Case No. 4. Diabetes Following Measles. A. S. boy, ten years of age. Family history negative. Past history very good until August, 1923, when he had a severe attack of measles which kept him in bed for two weeks. He remained under weight, tired easily, had polyuria and excessive appetite. His weakness became so marked that a physician was called about two months after the onset of the measles and he was found to have a large amount of sugar in the urine, together with diacetic acid and acetone. When he entered the hospital he was confined to bed, and his weight had been reduced from 75 to 50 pounds. There was 2½ per cent sugar in the urine and 250 mg. blood sugar per 100 c. c. On insulin and diet he became sugar free and gained in weight and strength. At the end of about three weeks he returned home on a diet containing 50 grams protein, 70 grams carbohydrate and 111 grams of fat, which he took care of on a small amount of insulin with sugar-free urine and blood-sugar within normal limits. At the present time, (three and a half years later), the boy is doing well on a restricted diet with some insulin, and his parents report that his urine is usually sugar free.

Diabetes beginning in a healthy boy at the age of 10 years, without some cause of disease of the pancreas, is improbable. We think that the attack of measles in this case was the important factor in the etiology of the pancreatitis and diabetes.

SUMMARY

The majority of cases of chronic disease of the pancreas are caused by infection or stone in the biliary tract. The infection travels by way of the lymphatics, or with infected bile. The acute infectious diseases may cause pancreatitis. A case of mumps has been added to the growing list of sim-

ilar cases. The report of a case of measles followed by diabetes indicates that measles may also be a potent factor in the etiology. The writer would urge that during the course of infectious diseases the possibility of secondary infection of the pancreas should be borne in mind.

The results of treatment depend on how much damage has already been done to the pancreatic tissue at the time of beginning the treatment. It should be prophylactic or early. Methods of treatment are suggested.

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HEMATOMAS IN FRACTURES

A Clinical Case

W. L. BROWN, M. D., and C. P. BROWN, M. D.,
 El Paso, Texas.

Mr. M. C., aged 24, had a fracture both bones of left forearm about the junction of the middle and upper third. A very large hematoma formed immediately. An anes-

thetic was given and efforts were made to reduce the fracture, which were not successful. Fig. 1.

As there was much swelling of the forearm and hand, in addition to the large hematoma, any further effort at reduction was postponed for two weeks. At that time the hematoma had, to a great extent, been absorbed.

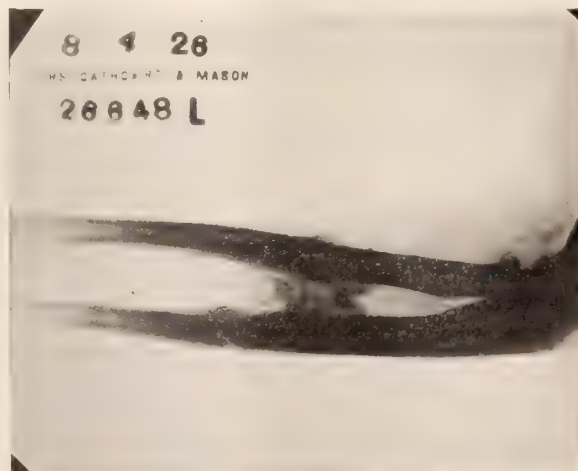


Fig. 2:—Shows perfect reduction; no buried retention material. Communion of radius and bridging from the radius.

Under anesthesia and the fluoroscope, considerable effort was again made at reduction. This could not be accomplished. Incisions were then made over each bone, and perfect open reduction made. It was not found necessary to bury any retaining material. The two fractures were not exactly opposite.

The recovery from the operation was perfect but the x-ray, taken one month afterwards, Fig.-2, showed that bridging was tak-



Fig. 1:—Shows fracture of both bones of forearm; not opposite each other.



Fig. 3:—Bridging chiseled away. Reformation of spur from ulna, and band of new bone attached at each end to ulna, probably osteo-periosteal in origin.

ing place, principally from the radius. This might have been expected as the radial fracture was comminuted.

The reduction is still perfect, and another picture taken three months following the open reduction, shows the bridge to be quite firm across from the radial fracture to the side of the ulna. It is again to be noted that the bridge is formed wholly from the comminuted radius, and attaches to the ulna entirely above its fracture. This bridging, of course, destroyed supination and pronation.

A little over three months after the open reduction the bridge was chiseled away, and at this time the patient has almost complete supination and pronation.

A peculiar phenomenon on the ulna just below the fracture will be noticed in the last picture Fig. 3. It is a definite band of bone completely separated from the ulna but attached to it at both ends. This must have been periosteum torn loose at the time of fracture, and carrying on its under surface many osteoblasts. Also in the last picture there will be noticed a definite spur grown out in the region of the original bridge. This springs from the ulna.

The relation of the hematoma to the bridging involves an important clinical principle; that is, the danger of such condition occurring in the presence of a large hematoma where there has been considerable manipulation of the fracture. It involves the question as to whether it wouldn't be better to do immediate open operation and evacuate the clot—the pabulum through which the osteoblasts are distributed and grown—whether or not the fracture can be immediately reduced and maintained.

Sir William Macewen¹ showed experimentally that osteoblasts would grow in a glass tube filled with a clot. He proved that the blood and serum offered a framework readily penetrated by the osteoblasts, and also furnished abundant nutriment for their growth. He further observes: "In the course of these experiments, it has been many times noted that where a fresh development of ossific matter has been poured out, the adjacent muscles, especially when ruptured or lacerated and filled with blood and plastic effusion, are apt to be infiltrated by the overflowing osteoblasts, and the muscular fasciculi become embraced in the rigid grip of the new formation of bone. This is seen clinically after fractures and other lesions where fresh depositions of bone take place peripherally."

He states that muscles in a healthy, normal condition are not inclined to be at-

tacked and infiltrated by osteoblasts, but after injury with contusion and much infiltration of blood and serum, they offer every facility for osteoblastic infiltration and growth. Sir William Macewen's experimental evidence, and evidence gained in the clinical case herein reported, proves beyond doubt the possibility of regeneration of bone from osteoblasts in blood clots.

Under these circumstances, in fractures of the forearm where closed reduction cannot be secured and maintained in the presence of a large hematoma, it probably would be better to do an immediate operation, evacuate the hematoma and make complete reduction of the fracture.

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THE COUNTY MEDICAL SOCIETY

J. M. GREER, M. D.,
Phoenix, Ariz.

Address of the President, at the meeting of the Maricopa County Medical Society, Phoenix, Ariz., January 17, 1927.

If one were to write an article upon the County Medical Society, he might start by asking the question, "What is the matter with the county society?" This would immediately imply that there is such a thing as a County Medical Society and that it had certain functions and that certain things were expected of it. This question would further imply that this county society is an important organization, so important that it has reached the stage of getting itself talked about and that this gossip had reached the high point that someone had dared to ask the question, "What is the matter with the county society?"

This high point has been reached and in the Bulletin of the American Medical Association for October, 1924, there appeared a little article in which just this question was asked. There were many replies to this article from various parts of these United States. Some said that there was nothing the matter with their county societies and went on to brag about the efficiency and excellent work of their particular organizations. Others admitted that their societies were not very good and blamed their officers, cliques in the society, and various other things for it. Some complained that their programs were too scientific, others that they were not scientific enough. All of this going to prove that the time-old problem of pleasing everyone is still impossible of solution.

As an example of some of the replies to

this question I should like to quote just two letters that were received. One is from a western state, and reads as follows:

"First, there is too much business transacted that is not scientific before the reading of papers, so that the members become wearied, and the real scientific part of the program is reached when one is not fresh enough properly to appreciate it.

"Second, cliques appear which rule from the standpoint of revenge rather than for the furtherance of the interests of the entire body.

"Third, cliques permit the program to be given over to members who either never appear or never prepare papers that show any effort of thought.

"Further, the American Hospital Association requires staff meetings to be held at least once each month. I am on the staffs of three hospitals, as are others here. After three staff meetings each month, we are not greatly disposed to go to the county society meeting unless the program is attractive."

Here is what a doctor from Illinois has to say on the subject:

"I have been a member of the county medical society for more than twenty years. In the 'old days' a 'good' county medical society usually met at least once a month and the members were expected to furnish the program. Now-a-days it seems to be the general rule to have the program furnished by 'outlanders,' of greater or less reputation, from distant cities. The meeting dates are farther and farther apart, until in many instances once a year is the extent to which they get together and, even then, they often combine two or three counties in order to obtain, as they imagine this necessary, sufficient attendance to be of any value. The result is that many medical societies, as cohesive and efficient forces for advancing the interests of the medical profession, are practically nil. The county medical society certainly has a tremendous field of usefulness outside of the scientific side of medicine. The situation is not a simple or easy one to solve. The medical man is a very different proposition to handle. He is a natural born individualist and he soon finds out that, if worst comes to worst, he can still make a living and tell the rest of the world to go to h—. However, there is one point to which most of them pay considerable attention and that is maintaining their membership in the county, state, and national societies. They do not like to be 'outside the pale.' There is one remedy, it would seem, that might be of value and that is to compel the membership to function or lose their standing. Each member might be compelled to furnish at least one scientific paper a year or lose his membership. The society, itself, might be compelled to meet a certain number of times each year or lose its membership in the state society.

"I am wondering if the present attitude of the profession is facing its problems in the frank and fearless attitude that it should. The farmers think a real dirt farmer is the only one that can solve their problems. To a certain extent the doctors, who are up against it, financially speaking, and who are finding it difficult to make a decent living, are the ones who feel most keenly the present-day problems of the medical profession. Medicine is not only a scientific calling but it is a business and a means of livelihood as well. Any satisfactory solution of medical problems must involve an equal and careful consideration of both the scientific and business needs of the profession."

These two letters are quoted to illustrate the fact that other county societies as well as ours have their difficulties and their problems.

In many places throughout the United States much interest is taken in the county society.

For example, the St. Louis County Medical Society has owned its own building for over ten years. On July 16, 1925, the corner stone for the new building was laid and it has since been completed. This building is adequately furnished and also houses the very complete library of this society. All this represents a great effort, over a long period of time, of many members of this organization. It represents, one might say, a great big stone in their progress and certainly is worth while.

Another outstanding example of a well organized medical society is The Medical Society for the County of Kings, Brooklyn. This society was established in 1822. The present constitution and by-laws set forth its objects as follows: "The advancement and spread of medical knowledge; the support of a medical library; the promotion of scientific education; the publication of proceedings and medical papers; and the fulfillment of the duties of a county society."

The development of one hundred years finds the society maintaining the fourth largest medical library in the United States, housed in a modern fire-proof building containing, in addition to the library, space of stack-room for books, a reading room, offices and an auditorium seating 350 people, as well as two meeting rooms, one accommodating about seventy, and the other thirty people. In addition to the regular stated monthly meetings of the society, the auditorium is used for many other meetings, lectures, etc. In 1924 this society, through appropriate committees, prepared standing orders for the Visiting Nurses Association. In '23, '24, '25, it became interested in the periodic medical examinations of apparently healthy persons. In 1925 it again considered the nursing problem in its many ramifications. It considered hospital and health circles. It is constantly active in the hospital and dispensary situation.

The participation in community affairs of this society is a noteworthy example. The legislative committee holds an annual dinner at which it entertains all the legislative representatives of the county. The clinical committee conducts the Friday afternoon practical lectures to which the entire medical profession is invited. The joint committee of the society and the Long Island Hospital Medical College conducts more than one hundred courses each year in the graduate teaching program. The public health committee provides a channel of communication with the official and un-

official health agencies and is conducting studies of dispensaries, the control of syphilis in private practice, the cost of medical care, health examination procedure and the like. The milk commission is the fourth oldest in the United States and certifies over five million quarts a year. The committee on illegal practice has been responsible, in cooperation with the governmental agents, in the accomplishment of a considerable improvement in its field. The joint committee of the medical society and the Brooklyn Chamber of Commerce has studied the health resources of the borough and is considering the advisability of the establishment of a health council for Brooklyn.

These and many other activities mean work for the membership and the expenditure of time and money.

Much of the work accomplished is the result of community support. The society maintains its home, supports a medical library for the public benefit and by its very existence makes possible general community participation in medical matters. It is attracting the required support from the community to provide the many supplementary activities entering into the completely rounded service that a county society can render.

The above are but two examples and there are many others. Now, of course, we all know that at the present time, at least, the Maricopa County Medical Society cannot own its own home, nor can it build and equip an elaborate library, but there are many, many things that even our little society out here in this isolated district can do.

The purposes of the Maricopa County Medical Society as laid down in the Constitution (the latest copy I could find is dated 1911) is as follows:

ARTICLE II.—Purposes of the Society

The purposes of this Society shall be to bring into one organization the physicians of Maricopa County, so that by frequent meetings and full and frank interchange of views they may secure such intelligent unity and harmony in every phase of their labor as will elevate and make effective the opinions of the profession in all scientific, legislative, public health, material and social affairs, to the end that the profession may receive that respect and support within its own ranks and from the community to which its honorable history and great achievements entitle it; and with other county societies to form the Arizona Medical Association, and through it, with other state associations, to form and maintain the American Medical Association.

County medical societies are organized to further the progress of medicine both locally and nationally. Their object is the study and discussion of medical and surgical conditions affecting the human body. Their

meetings are schools of instruction, and, if conducted in such a manner that each one in the conference is asked to contribute of his knowledge or experience, the time is well spent.

To prepare a good program for the year requires an expenditure of thought, time, and energy and persuasion on the part of the officers that is seldom appreciated by those who have not had the experience. To do this without hope of earthly reward, and with the certain knowledge that, no matter how excellent the programs, the only comments will be in the form of criticism by those impossible to please, is as much as any set of officers can be expected to do.

In some of the larger societies there is a movement on foot to form auxiliary bodies with a membership of practically the same individuals as those comprising the county society and their object is to create friendship, discuss economic and community problems, and to teach the doctor that he is not a thing apart but a man among his fellows, who, because of the intensive and logical training he has had, is more capable than many of his fellow citizens to deal with governmental and social problems of the community and state. Although this work is entirely aside from the scientific deliberations of the county society, yet we feel that it is very important and, for the present at least, should be a part of the duties and objects of the Maricopa County Medical Society.

As an illustration of the present day trend in county medical society activities, the minimum program adopted by the Michigan State Medical Association for their county medical societies is given below:

Section 1.—Scientific—

(a) Ten meetings are to be held during the year. Local speakers are to appear before three meetings with definite planned discussions.

(b) A program of physical examinations shall be instituted in which all physician members shall agree to have a complete physical examination themselves and each shall agree to secure at least five patients who will agree to have complete physical examinations.

Section 2.—Social and Informal Activities—

Each Society is to have at least three dinner meetings. The speakers for these meetings shall be public speakers, educators, financiers, but not medical men. At least one picnic shall be held. At least one social evening, in co-operation with members of closely related organizations shall be arranged.

Section 3.—Scientific Teams—

Each Society shall have a group of two or three members who will prepare a program and give it on request before at least three other Societies.

Section 4.—Public Health Information and Education—

Each Society shall plan to have at least one Public Health lecture group which shall give at least five lectures in cities and communities outside of their resident communities or cities. Ad-

joining counties are to be included. Each Society shall co-operate and assist other organizations so that the following public lectures may be held. (Co-operation shall be established with the Extension Department of the University of Michigan, and the Joint Committee on Public Health.)

- 1 lecture for each High School.
- 1 lecture for each Parent-Teacher Association.
- 1 lecture for each Luncheon Club.
- 1 lecture for each Woman's Club.
- 1 lecture for each Association of Commerce.

Section 5.—Publicity—

Each meeting, scientific or public, shall be reported to the local newspapers in such form that at least one important point of value can be read by the reader.

The Secretary shall report each month to the State Medical Society the complete record of all activities and accomplishments.

After the above brief discussion we might outline the policies of this administration of the Maricopa County Medical Society as follows:

1. This Society shall be conducted for the MEMBERS, in such a manner as they may wish it conducted in order to enable them to receive the greatest benefit therefrom.

2. Every member will be invited, encouraged and expected to take an active part in the programs. "Being too busy" or the plea of timidity, or "I have nothing to give," will not be accepted as an excuse. It may be true that some have more than others to impart to their colleagues, but every one has something.

3. Every encouragement will be extended to every member to express himself freely before the society on any subject of mutual interest, or on any subject that may be of benefit to the profession, or to the community in relation to the profession.

4. It shall be the policy to have the programs consist of contributions from the membership. At intervals when it is possible to obtain a contribution from the outside, that seems worth while, an effort shall be made to secure it.

5. An effort may be made to have a few joint meetings with neighboring county societies, providing they can be conducted with a reasonable hope of securing a fair attendance from the membership of both organizations.

6. It shall be the policy to have short snappy papers, and discussions upon subjects which are both scientific and otherwise and which are of interest to the majority of the members. These papers should be worked over until they contain essentials only and yet not so short as to lose their individuality and interest. They should be presented with as much enthusiasm and individual self expression as possible and in a voice that the last man on the last chair may hear and understand.

The symposium type of program seems worthy of encouragement, as well as the presentation of interesting cases that may be outside the hospital.

7. Due courtesy and entertainment should be extended to visitors who happen to pass through our county, and who are members of county societies elsewhere. These visiting members of the profession should be invited to attend our regular meetings.

THE RELATION OF THE COUNTY MEDICAL SOCIETY TO THE STATE AND NATIONAL ORGANIZATIONS.

D. F. HARBRIDGE, M. D.

Secretary, Arizona State Medical Association
Phoenix, Arizona

Read before the Maricopa County Medical Society,
January 17, 1927.

The national body is a federation of the societies of all the states and dependencies of the United States; each of these commonwealth associations being represented by delegates. Each state organization is composed of the individual county societies: therefore, the county societies are the units which go to make up the fundamental and numerical strength of the national body. The national body, consequently, is only just so strong and useful in spreading its influence as each unit helps to make it.

I wish to emphasize the point that the great American Medical Association, by virtue of this form of constitution, can act only in an advisory capacity. The organization is along the lines of the United States Government. The leaders cannot and do not go into a community and dictate the policy that shall be followed. To illustrate: They have in their possession a world of information regarding hospitals, the nurse question, institutions for medical instruction, state medical examining boards, etc. They cannot and do not go into a community and dictate how these several things shall be conducted. They expect—and it was carefully planned in the early organization of American medicine—that each local community shall take care of its own local problems, and that the association stands ready to offer all needful assistance to a proper execution of such a program. Fundamentally, medical organization is not fostered for commercial reasons or for the purpose of fighting cults, fadists, etc., but essentially for the purpose of establishing high ideals among its own members; for scientific advancement; to eliminate the unprincipled physician; in a word, to make a doctor a good doctor, and a good doctor a better doctor.

In what way has the American Medical Association undertaken to assist its members in carrying out this propitious program?

Prior to 1847, there were quite a number of medical organizations throughout the country, but no national organization centralizing medical thought and activity. About this time, a group of sincere New York medical men, fathered by Dr. Nathan Smith Davis (the grand old man in medicine in Chicago), formed the nucleus of what is now the present American Medical Association. In 1900, there were about 8,000 members. Since that time, under the masterful leadership of Dr. George Simmons, the membership rapidly increased until today it numbers upwards of 90,000. It is a huge organization with headquarters in Chicago, occupying a building 200 by 400 feet, seven stories and basement. In this building are housed the officers, department executive secretaries, some 400 employes, chemical laboratories, printing apparatus, complete card indexes of a vast amount of information and a library circulating current medical journals of the world.

From this equipment is issued, weekly, upwards of 95,000 copies of the greatest medical publications in the world today, The Journal of the American Medical Association, covering all branches of medicine, together with many departments; seven special medical journals; Hygeia, a magazine for lay reading; a Medical Directory, containing about 160,000 names and addresses and needful information of physicians in the United States and possessions and Canada, and a Cumulative Reference Index to all published medical contributions in the world. This latter is a monumental piece of work when I remind you that in the world there are between 1,500 and 2,000 medical publications.

The activities of the American Medical Association are many. Through its bureau of investigation there has been accumulated a card index of over 125,000 investigations of new and non-official remedies, patent-medicine makers, quacks and mail-order fakes. So alarmed did these purveyors of pernicious mixtures become, due to the publicity of this information, that suits for libel were filed to the amount of thirteen million dollars. At the present moment two suits, each for \$100,000, await action of the court, one concerning a cancer fake and the other a cure for deafness. This information is open to you. Before using an uncertain remedy, use this source of information.

As a result of another line of activity, came the cleaning up of the advertising pages of medical journals, leading newspapers and magazines of the country. This has been done so well that the standing of a medical journal, newspaper or magazine is judged by the quality of its medical advertisers. Those carrying quack medicines and medical fake advertising are immediately classed by the thinking public as unworthy of consideration.

The standardization of medical schools is another accomplishment of this great medical organization. Prior to 1905, there were some two hundred medical schools, almost as many as there were in all the rest of the world. Many of these schools were of the rankest inferiority. By the simple means of grading each school as A, B, or C, and publishing their standing, within a very few years the number was reduced to about 80, and the quality markedly improved. The pendulum has swung rather too far and a consideration of more economical means of time and money is about to be launched.

Truly sincere of purpose and capable, Dr. Olin West, secretary. Dr. Woodward of the Bureau of Lateral Medicine, Dr. John Dodd, and Dr. Fishbein, editor, certainly are a class of men difficult to equal. I feel satisfied from personal contact with these gentlemen that this is correct. Dr. West is a clean, keen, alert man, well fitted for the position of secretary. Last August I spent five hours with him talking over all manner of problems connected with organized medicine. I only wish time would permit me to familiarize you with the details of this conference.

Let me cite two instances illustrating the outstanding importance of this organization which we have helped to build through our local county society.

So impressed has the American Bar Association been by the form of organization of the American Medical Association, that they have instructed their president to make an intensive study of all details of the organization with a view of adopting it to their needs. This followed a consideration of the methods of organization of all national professional bodies in this country, such as theatrical, religious, other medical bodies and their own present organization. Their decision to do this was based on the fact that the organization of the American Medical Association is comprehensive in scope, designed to help by suggestion, but non-interference, in unit communities, liberal enough to attract and hold the major mass of professional men,

holding before them an ambition to attain a higher plane of efficiency and fraternal contact.

The second illustration. Cyrus Curtis, the great publisher whom we had as a guest in our valley last winter, not only told me personally, but I was also informed in Chicago, that all his publications used the American Medical Association for such information as needed.

Needless to say, this organization, magnificent as it is, a monument to medical science, is not perfect. There is no such thing as a perfect organization of human minds. Much criticism can be made, and, as a matter of fact, it is courted, but let it be a constructive criticism. This can be fittingly carried out by the loyalty and serious efforts on the part of each member composing the unit, the County Medical Society, and through the aggregation of these units, the State Association. Personal exploitation has no place in scientific medicine. Unification of action as a result of unit group scientific meditation is the solidifying element so necessary for the proper continuance and development and advancement of this great pioneer parent organization.

REVIEW OF MEDICAL ETHICS

H. B. GUDGEL, M. D.,
Phoenix, Ariz.

Read before the Maricopa County Medical Society, Phoenix, Ariz., January 3rd, 1927.

This paper has to do solely with medical ethics, a subject which I will try to present, using as a basis the principle of medical ethics set forth by the American Medical Association.

Character, intelligence, and moral rectitude are inborn traits which no set of rules, oratory, or papers can change. Yet rules are very necessary for every walk of life as they have a tendency, as it were, to keep the beacon light burning in the proper path, so that when someone accidentally or intentionally oversteps the traces, and dashes out a by-path, the light is a guide to the right way.

God made man, and He arranged that thereafter every so often another doctor should bloom forth—not so often in these days when the educational requirements have been so elevated that many of us would feel the process a little too long, a little too severe, to undertake. We have hopes, and no doubt there will be better doctors in the years to come; but let me say, if you please, there were countless excellent physicians—old family doctors—born in these states after a two-year school,

mixed with a preceding summer and a summer between school years, with the good old-fashioned doctor as preceptor.

These were good men; thinking, conscientious men; men with good judgment, keen observation and keen wits. These men worked under the old Hippocratic code—that code which stated that physicians must be men, morally and mentally; the code which placed the practice of medicine as a service to humanity; a code that places the practice of medicine and surgery as a profession; and which obligates the doctor to conduct himself in accordance with its ideals.

There is probably nothing more important to a physician than patience and secrecy—patience, that he may not be careless and fail in painstaking study of the condition in hand; and secrecy, that all knowledge, either domestic or physical, coming to him from his patient, and intrusted to him, should be held inviolate. There are many close questions as to disease, when the physician might protect a healthy, innocent individual; yet it is advisable to know the law concerning privileged communication before giving such information.

It is unnecessary to exaggerate or minimize an ailment. The patient has not called to be frightened nor embarrassed. Just be human and conscientious, whatever the ailment, curable or incurable.

Hippocrates said: "The physician should be modest, sober, patient, prompt to his whole duty without anxiety, pious without going so far as superstition, conducting himself with propriety in his profession and in all actions of his life."

This would naturally bar any and all schemes of advertising. It would also conclude that solicitation of patients is unprofessional, whether it be verbal or written. In fact, it is of no true value for a physician's name to be in daily papers in connection with medical conditions. By this is meant something different from the name on cards. The simple card bears no special objection, unless by chance, or accident, it happens to be found in the room of a patient whose physician would probably not welcome or appreciate its presence.

All doctors are friends—but the tendency is not to be complimentary when trespassing on another's preserves.

The lauding of special cures, whether mechanical or medicinal, is very unprofessional and unnecessary. If any physician has something of true value, including knowledge, he will not have to announce the fact.

The radiation of success will be all that is necessary. By this it is not meant to hide the light under a bushel—such a light won't stay hid. It is just as unprofessional to receive remuneration for services not rendered, splitting of fees, or to receive rebates on prescriptions or a share in the profits in the shroud of the last sleep.

Frequent consultation in doubtful or difficult conditions and serious illness, in no way interferes, and is a thing to be recommended. In every consultation the benefit to be derived by the patient is of first importance. Every one should be, rather, must be, frank and candid with patient and family. There is never the least occasion for insincerity, rivalry, or envy, and they must never occur between consultants.

It is a breach of social etiquette to fail to be on time at consultation. However, if the physician should be unavoidably delayed after the consultant has arrived, the consultant, by permission from the patient, may make examination and set forth his opinion in writing, sealed, for the perusal of the attending physician.

All consultations are better in private and no discussion of a case should ever be held unless all physicians are present. However, in an emergency, a consulting physician may give assistance in the absence of the regular physician, to whom he will turn the patient with a verbal or written report of his findings. This should be true in ordinary cases, and when a family have a regular physician and another is called in emergency, he should refuse to continue the case when the regular physician is obtainable.

When a physician is called as a consultant, he should not become attendant in that case except with the consent of the physician in charge at the time of consultation, and there is grave doubt whether he should ever take charge, unless the case is turned over for treatment other than the physician feels competent to give. Nor is it professional to discuss the case or to make suggestions by hint or gesture, or to suggest treatment, otherwise than discussed at the time of consultation. Therefore, it is absolutely imperative that a consultant, or physician in ordinary intercourse with a patient in the hands and under care of another physician, should practice the strictest caution and absolute reserve, so that the patient or family will not be at all disturbed in the trust reposed in the attending physician. The same is true in a social call of a physician on another's patient. In no instance need it be necessary to inquire as to the cause of illness, nor about the

treatment. In no instance should a physician take, or prescribe for, a case that is under the care of another physician unless the other physician is dismissed. When such a change is made, it does not behoove the new attendant to criticize, make comments or insinuations regarding the old attendant. There is no place in medicine for egotism, criticism, insinuations or boasting before the public, and every unkind word usually reacts on the critic, as rightly it should.

In an emergency when the family attendant is not at hand and another physician is called, the emergency physician should attend for the immediate need, and withdraw from the case on arrival of the family physician, after he has reported his findings and the treatment given. Where several physicians are called in an emergency, the first physician at the bedside will attend; as soon as the emergency is over, it is wisdom to ask the patient's preference of physicians. If another is preferred, withdraw from the case in favor of the chosen attendant.

If a colleague is requested by a physician to attend a patient during his absence or in an emergency, the colleague should comply with his best ability, or as he would wish a physician to do for him; always without comment that might retroact against the first physician. As soon as the first returns, all history should be turned over, and the second physician withdraw from the case.

Physicians are good, wholesome men. There have been many epithets applied to contemporaries in the practice of medicine, but at the same time, there have been more that have shared in the love and admiration of the profession.

To share this good will, it is necessary to attend and give of your study and experience to the meetings of physicians, the county, the state, and national. Too many meetings are probably not stimulating; be that as it may, prepare something, and thereby stimulate the county society, which reacts to state and national. No physician can afford to permit himself not to be numbered with a good county society, not for private reasons, but for upholding the profession.

ORAL DIAGNOSIS AND HOW OBTAINED

L. A. NEIL, D. D. S.,
El Paso, Texas

Read before the El Paso County Medical Society,
El Paso, Texas, Oct. 4, 1926.

Almost daily I am impressed with the fact that the medical and dental profes-

sions, as a whole, are falling short of their responsibilities to their patients, thereby failing to render the health services justly expected of them.

Nothing has ever done more to dignify the position of the dentist and bring together the physician and dentist for a better human health service than has the theory of focal infection.

Mayo says that about 80 per cent of all systemic infection originates in the mouth, the teeth and surrounding tissues being responsible for 75 per cent and the tonsils 5 per cent. Likewise the research work of such men as Rosenow, Billings, Price, Haden and many others have brought the medical and dental professions to a realization of the serious and prevalent connection between oral infection and systemic diseases and the importance of finding successful means of combating same. Therefore, today the well-informed physician realizes his dependence upon a reliable dental report before he can complete his diagnosis.

I am thoroughly convinced that a great many more physicians feel the necessity of an early and reliable mouth diagnosis than know just how to go about obtaining it. This statement I make because I am familiar with some of the questions and suggestions made to the patient when the physician is suspicious of mouth infection. About the first question is: "How are your teeth?" If the patient has recently had a filling or two, and his teeth "cleaned at," he will reply: "All right, I have just had them fixed." If the patient's reply should be: "I don't know," the physician will then say: "You had better go to your dentist and have them looked over." In either instance this patient may have fallen into the hands of an advertiser, or of some good ethical dentist who knows and cares little about focal infection, or one who has a busy practice and little time and equipment for modern and scientific diagnosis. So far, neither the physician nor patient has accomplished anything toward a mouth diagnosis.

Another common request made of the patient by the physician is: "You had better get your teeth x-rayed." By the laity, and possibly by some in both our professions, the x-ray is looked upon as being the last word, when, in fact, it is only one step toward a diagnosis and never to be depended upon alone. When the x-ray is relied upon exclusively, the patient has simply bought himself a set of "tooth pictures." The physician and patient are still no nearer a mouth diagnosis than when they started.

Certainly it is not my intention to belittle the importance of the x-ray in oral diagnosis, for it is the most valuable means at our command, but we must remember it has limitations. For instance, the black spot or absorption may exist at the apex of a devital and infected tooth and not show on the radiogram. "An area of absorption may not be disclosed by the radiogram we will say, for three reasons: first, being hidden by another root of the same tooth; second, a heavy mass of bone, such as the malar bone; third, a layer of condensing osteitis obscuring the rarefying osteitis."

Again we have the infected tooth as a host to the individual who is not capable of giving a good healthy reaction to infection. A good healthy reaction would manifest itself by bone absorption. Price³ says, "Dental infection may manifest itself in bone by extensive absorption, by slight, or no absorption, and by condensing osteitis, all based upon the resistance and susceptibility to systemic involvement to dental infections." There is entirely too much "x-ray diagnosis" and I trust you see why I am opposed to it.

As further evidence of the limitations of the x-ray and that we must not depend solely upon it, permit me to remind you that Rosenow of the Mayo Clinic was cured of lumbago, a year or two past, after the removal of two devital teeth which showed no radiographic evidence of being infected.

Haden,⁵ of the Deaner Institute, has recently given us a report of "600 pulpless teeth with negative radiograms, cultured, 25.7 per cent had more than 100 colonies and 56.7 per cent one or more colonies. The comparative group containing ten colonies per tube constitute 46.2 per cent of the total number. This is a very high percentage showing bacteriologic evidence of infection in teeth without radiographic evidence. Of cultures made on the same number of teeth with x-ray positive findings 62.8 per cent had ten or more colonies." This report certainly does suggest that the x-ray negative tooth may be as important a factor in systemic disease as the x-ray positive tooth. While the percentage is some larger in the x-ray positive tooth, bacteria are better walled off than we find is the case in the x-ray negative tooth where the bacteria and toxin have easy access to the blood stream.

Devital teeth showing no radiographic evidence of apical infection furnish both the medical and dental professions a very serious question for thought as well as for argument and discussion. Such men as

Haden, Price, Rosenow, Mayo and others have proved conclusively that devital teeth are a direct menace to health. I do not advocate the removal of all devital teeth in mouths of healthy individuals but, on the other hand, it is my strong belief that devital teeth should not be carried in mouths of patients who are suffering from some disease that might be caused by focal infection, especially when other sources have been ruled out. Physical condition and age should govern us largely in our recommendations relative to devital teeth. In this preventive age we should see that infected teeth are removed before the heart begins to beat irregularly, before the urine contains albumin and before the joints become deformed.

As further evidence against the x-ray negative tooth permit me to call your attention to a patient recently referred by a physician. Patient, woman about forty-five, with a heart condition diagnosed by the attending physician as auricular fibrillation. All teeth were carefully radiographed. In this case the x-ray showed five crowned teeth to be negative. The case was serious, so the crowns were removed in order that the teeth might be given the vitality test. Two out of the five were found to be devital; one was well scrubbed, the tooth and surrounding gum tissues were painted with iodine, being careful to see that the iodine penetrated well into the space between the gum margin and the tooth. The iodine was then washed off with alcohol, the tooth carefully removed and, upon culture, a profuse growth of streptococci was obtained.

Patient was relieved of this heart condition shortly after the removal of these two devital teeth and has not had a recurrence of it up to the present time. In this case, had the x-ray been depended upon alone for diagnosis, the patient very likely would not be here today to vouch for my report.

We will now take into consideration the essentials necessary, in my opinion, to make a thorough and reliable mouth diagnosis. The first thing when a patient presents himself for a mouth diagnosis is to determine the suspicious areas, in order that they may be thoroughly radiographed. The suspicious areas might be enumerated as follows: all crowned teeth, teeth with large fillings, teeth with synthetic fillings, teeth with more than normal mobility, teeth off color and teeth surrounded by unhealthy gum tissues. All areas of missing teeth should be radiographed regardless of a history of extraction, for here we often find

impactions, unerupted teeth, roots and cysts. This oftentimes entails a complete set of fourteen exposures. All teeth not x-rayed at this time should be tested for vitality.

Having all the necessary radiographs at hand and properly mounted, they should be placed upon a well illuminated reading box for thorough and systematic study, to determine bone changes at apical region, root canal fillings, alveolar crest absorption, thickening of membrane, pulp nodules, overhanging crowns and fillings, impactions, unerupted teeth, roots, cysts, pyorrhea pockets and cavities; properly recording same at time noted.

We see the patient a second time, in order that all teeth not shown by the radiograms to be devital may be given the vitality test and to assist in the correct interpretation of the radiograms, being cautious to record findings without delay. Teeth with gold crowns can not be tested for vitality and are therefore troublesome to get an accurate check upon. We often find it necessary to cut off a gold crown and always feel fully warranted in doing so, regardless of x-ray findings, especially when our patient gives a history of some disease that might be caused from focal infection. I consider a good pulp tester almost as valuable in mouth diagnosis as is the x-ray. At this same sitting a thorough clinical examination is made, noting condition of soft tissues, depth of pyorrhea pockets, for mobility and for labial and lingual bone absorption that does not register on radiograms. Too little attention is paid to periodontal (pyorrhea) lesions. Case history both past and present, oral and systemic, should be taken and properly recorded.

Having gathered the above information, same is recorded on a printed diagnostic chart, so that an intelligent and reliable diagnosis and prognosis may be reached.

CONCLUSION

Dentistry is as much a branch of public health service as is medicine, therefore the grave importance of a better understanding and co-operation in order that this service may be rendered.

Due to the fact that oral foci of infection are the etiological factor in a very large percentage of systemic diseases, there is imposed a great responsibility upon the dentist by the physician and patient as well.

The physician is in need of and dependent upon the dentist for a reliable dental report before he can complete his diagnosis.

The x-ray negative tooth is as great a menace to health as the x-ray positive tooth.

A reliable mouth diagnosis from radiograms alone should not be expected.

Today dentistry is as highly specialized as is medicine and the same precautions should be exercised in referring your patients to a dentist for a real service that you would use if you were referring the same patient to a physician for some special service.

The relation between physician and dentist should be one of enthusiastic and intelligent co-operation. Nothing short of this is justice to our patients.

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CASE REPORT

M. B. CULPEPPER, M. D.
Carlsbad, N. M.

Read before the Eddy County Medical Society.

(An unusual fatal termination of an apparently normal confinement on the thirty-second day post partum.)

Mrs. H. B., age twenty-four, primipara, native of New Mexico. Family history without much import except her father was a heavy drinker but apparently healthy; mother strong and vigorous, with eight children, all of whom were healthy except one brother, age nineteen, who has developed epileptic fits within the last three years.

Became pregnant about December 27, 1925, and after six weeks began suffering from vomiting which persisted in rather a severe type till about the end of the fourth month, when the advisability of terminating the pregnancy was considered but this was finally avoided by hospital care.

She suffered with a pronounced pyorrhea and had to give up some of her teeth during the fourth month and this condition seemed to be relieved to some extent afterwards. After the fourth month her pregnancy was unaccompanied with any serious manifestations and she gained in flesh and general appearance till she entered the hospital on October 3, 1926, the date of confinement, which was of only a few hours and uncomplicated. It was noticed that there was somewhat more hemorrhage immediately following than is usual after normal confinements, but it lasted only for a few minutes and thereafter no further signs

of anything abnormal occurred until the twelfth day, when, without any warning whatever, she had a violent hemorrhage. She had been allowed to return to her home on the ninth day after confinement, and during the lying-in period the lochia was never more than normal. She had had no fever, only one registration showing a temperature of 99°. Her milk flow was sufficient to nourish her baby and her organs of elimination had performed normally.

She was allowed to sit up and give directions for the care of her baby, her appetite was good and she slept well. On the night of the twelfth day, while in bed at rest and without warning, the terrific hemorrhage mentioned occurred. I was out of town and she was seen by Dr. Pate, who assured me that he saw no cause for such a hemorrhage and could see no reason for its return. I saw her the following day and could see no threatening of its return, but advised that she be kept quiet for the next few days. On the sixteenth day another hemorrhage of about the same proportions occurred which affected her vitality markedly, after which I proceeded to make a survey of the interior of the uterus. With light anesthesia the uterus was swept out with dull curette, followed by warm sterile douche, some decidua with spongy looking masses which, at the time, were taken to be placental structure, were removed. The uterus was packed with sterile gauze which was allowed to remain for twenty-four hours. Upon the removal of the gauze no further hemorrhage occurred for seven days; then, again without warning, another severe hemorrhage which almost exsanguinated her occurred, the uterus was again entered and more of the masses of spongy moles removed; this time it was noticed that the mass on its attached surface was supported by circulation and was vital. It had no odor, as is the case with retained placenta, nor had there been at any time odor of decomposition. I was by this time convinced that something very much out of the ordinary was present. The patient had become very anemic, with a waxy color, would not eat but consumed large quantities of water. A blood count by Dr. O. E. Puckett showed 40,000 leucocytes. Respiration became labored and puffy; pulse rapid and weak and coma began to appear, but she could be aroused after which she became nervous and irritable. After this hemorrhage there was a continuation of a sero-sanguinous discharge, not very pronounced but with a peculiar fetid odor, not like that of decomposition but resembling that of uterine cancer, and ac-

accompanied by many shreds of mossy consistency. Her labored breathing was different from anything I had ever seen and I think now was due to metastases filling her lungs. Her complexion assumed a decided jaundiced appearance before death. Throughout her entire course, scarcely at any time did her temperature rise above normal, and much of the time was subnormal. Her pulse weakened as her anemia progressed.

DIAGNOSIS: The termination of this case in so short a time after delivery is to some extent against the diagnosis of chorio-carcinoma, as the average of these cases extend to four to six months after labor. But undoubtedly the excessive hemorrhaging served to hasten the termination; had these hemorrhages been less severe the slower development as noted in most cases of chorio-carcinoma, would have been more fully brought out.

I feel that no case of hydatid mole could or would have produced such rapid and disastrous effects as was confronted in this case; besides, the cachexia and characteristic carcinomatous odor, with tendency to metastases in the lung created an overwhelming evidence of malignancy. No autopsy was had to determine the last word in pathology.

BOOK REVIEWS

An Introduction to the Practice of Preventive Medicine, by J. G. Fitzgerald, M.D., L.L.D., F.R.C.S., professor of Hygiene and Preventive Medicine and Director School of Hygiene and Connaught Laboratories, University of Toronto; assisted by Peter Gillespie, M. Sc., C. E., M. E. I. C., Professor of Civil Engineering, University of Toronto; and H. M. Lancaster, B. A. Sc., Chief Dominion Analyst, Department of Health, Canada, Ottawa, formerly director of Division of Laboratories, Provincial Board of Health, Ontario, and Demonstrator in Sanitary Chemistry, Department of Hygiene and Preventive Medicine, University of Toronto; and chapters by Andrew Hunter, M. A., M. B., F.R.S.C., A. H. W. Caulfield, M. B., J. G. Cunningham, B. A., M. B., D. P. H., and R. M. Hutton, B. A. (Oxon.); second edition; St. Louis; The C. V. Mosby Company; 1926; \$7.50.

As more and more attention is given to the all-important subject of preventive medicine there will be more and more non-medical trained workers and, hence, a demand for a book dealing strictly with prevention. Then, too, there are many physicians who devote their time entirely to the work of prevention and to whom a book dealing specifically with the questions of preventive medicine must appeal. Fitzgerald's book impresses the reviewer as of exceptional merit.

There are 25 chapters in the book. The more important titles are Diphtheria; Measles, Mumps, Whooping Cough; Tuberculosis, Pneumonia, Influenza, Bronchopneumonia, and Common Colds; Cerebrospinal Meningitis, Anterior Poliomyelitis, Epidemic Encephalitis and Trachoma; Diseases Transmitted by Food and Water; Insect-borne Diseases; Smallpox, Rabies and Chickenpox and Others of

Unknown Etiology; Venereal Diseases; Tetanus, Anthrax, Gas-Gangrene, Glanders, Erysipelas; General Methods for Control; Water; Milk; Food; Sanitation; School Hygiene; Industrial Hygiene; and Public Health Education.

The reviewer has read many pages of the work and found it simply written so that even those not trained in all the fundamentals of a medical education may read it with understanding. Physicians, particularly those doing public health work, will find the book of much use. It is recommended to all who are in any way connected with official public health work.

Facts on the Heart, by Richard C. Cabot, M. D., Professor of Medicine and of Social Ethics at Harvard University; illustrated; Philadelphia and London, W. B. Saunders Company; 1926, 781 pages.

This book is in Cabot's characteristic, fascinating style. He starts with necropsy findings and then by going to the ward records he works out the symptoms and etiology, as far as disclosed, of each case. The main part of the book, therefore, is made up of statistics, tables, charts, autopsy reports, clinical charts, etc., and is, as a result, in great part not the easiest reading. Cabot writes in the introduction: "Very few people should even try to read the whole of this book. I should advise most readers to read the opening and the closing chapters, and the summaries at the end of each section, and then to look over as many of the illustrative cases as seem interesting."

The text of the book can be made a safe model for histories, for autopsy records and for general and exhaustive studies of patients.

Perhaps the most outstanding statement of the book is that "most heart disease is imaginary." In one place he states that diagnoses of heart diseases, whether made by physicians or by the patients themselves, are usually wrong; and in such instances the heart is commonly sound. This statement occurs nearly as written above as a footnote on page 762. The reviewer is loath to allow this statement to go unchallenged. The author does not appear to attempt to prove his premise. As a matter of fact he probably regards the statement of no great moment except to call attention to imaginary heart trouble as a common and serious condition.

A surprising statement is that mitral regurgitation without stenosis is a lesion which is exceedingly rare at the autopsy table. A diagnosis of mitral regurgitation without stenosis he says is never justified. In his series of 1906 necropsied cases of heart disease he found seven cases of mitral regurgitation without stenosis, and three of these were doubtful. Since the diagnosis of mitral regurgitation without stenosis has been and is such a common diagnosis among physicians a general revamping of ideas about the lesions of the mitral valve is necessary.

Another conclusion which is somewhat astonishing is that scarlet fever, pneumonia, tuberculosis, typhoid, influenza, gonorrhea, and other infections, except rheumatism and syphilis, have no part in deforming heart valves.

Pericarditis is recognizable in only about one-fifth of the occurrences. He has but little to add to our present knowledge of angina pectoris. The reviewer is of the opinion that Dr. Cabot has not given simple cardiac dilation the attention that it deserves. His contention that dilation is a compensatory and helpful change just as hypertrophy, is certainly a surprise and a shock.

The printer's art is beautifully displayed. There are a number of typographical errors and an occasional ambiguous sentence. On page 35 he uses the words "combined lesions" and it is not clear just what is meant thereby. On the next page the word "people" is used when "persons" is doubtless a preferable term. On page 51, fifth line the word

"not" is in the sentence when clearly he did not wish to use a negative. On page 338, the second long paragraph, the second sentence reads: "The abdominal reflexes were present but sluggish, especially the cremasterics." The author probably does not regard the cremasterics as a part of the abdominal group of reflexes. On page 771 in second paragraph under myocarditis is printed the word "pressure" when "presence" is obviously the word intended. On page 132 next to the bottom line is the word "snowed" where clearly "showed" is intended.

This is a monumental work done in the style of a master and should be accessible to all clinicians.

—O. H. B.

American Medical and Sanitary Relief in the Russian Famine, 1921-1923, by Henry Beeuwkes, M. D., Medical Director American Relief Administration, Russian Unit; published by American Relief Administration, Herbert Hoover, Chairman, 42 Broadway, New York.

In 1921, crops failed throughout a great part of Russia and starvation faced 24 million of her people. The American Relief Association organized a Russian unit under the direction of Colonel William N. Haskell of the United States Army. Congress of our United States appropriated 24 million dollars in money or supplies for the starving Russians.

This little booklet is the story of how the relief was administered, the terrible conditions encountered and the results accomplished.

AMERICAN ASSOCIATION FOR THE STUDY OF ALLERGY

The American Association for the Study of Allergy is to hold its fifth annual meeting in Washington at the Washington Hotel, on May 16th and 17th. A dinner is to be given at which Dr. Arthur F. Coca is to deliver an address on "The Pathology of Atopic Hypersensitiveness." All physicians interested in the subject of allergy are invited to attend the daily sessions and to be present at the dinner.

Reservations for the dinner may be made with the Secretary, Albert H. Rowe, 242 Moss Avenue, Oakland, California. A check of \$4.00 for the dinner should accompany each reservation.

The program which covers many phases of the subject of allergy and presents an outstanding symposium on the subject by specialists from all parts of the United States, has been prepared for the two day session.

SUMMER CLINICS, CHICAGO MEDICAL SOCIETY, 1927

Announcements and schedules will soon be ready for the 1927 Summer Clinics of the Chicago Medical Society, supported by many of the largest hospitals in the city. Several of our large laboratories have also agreed to co-operate in this work.

In 1926 registrations were limited to physicians living in Illinois, but increased facilities make it possible to accommodate many more than last year. Registrations therefore will be open to physicians from other states and to as many as may be accommodated, in the order of their registrations. Registration fee will be \$10 for each two weeks course, payable at time of registration, and a physician may register for only one course of two weeks.

Admission will be by card only, issued by the Chicago Medical Society and no registration card will be issued until registration fee is paid.

The first two weeks course will begin on Mon-

day, June 13th, 1927, at 9 a. m., ending Friday, June 24th.

The second two weeks course will begin on Monday, June 27th at 9 a. m., ending Friday, July 8th.

GRANT COUNTY (N. M.) MEDICAL SOCIETY

The regular March meeting of the Grant County Medical Society was held in the Officer's Club, Fort Bayard, New Mexico, April 1, 1927, at 8:00 p. m.

The president, Dr. D. Kramer, called the meeting to order. The clinical cases which were scheduled for the evening were not presented. The paper of the evening was prepared by Dr. Hazon and read by Dr. Gunter, subject: "The Roll of Artificial Pneumothorax in the Treatment of Pulmonary Tuberculosis." The paper was well prepared and well read. It was discussed by Drs. Ferrell, Danielson, Groom, Kramer and others.

It was moved and carried that the president and secretary be authorized to appoint someone to read a paper at the State Meeting at Carlsbad.

Dr. Hazen has been appointed to read the above mentioned paper.

No other business coming before the society the meeting adjourned at 10:00 p. m.

PERSONALS

DR. ROY E. THOMAS, of Los Angeles, with his family, motored over to Phoenix recently and spent a few days visiting relatives. He attended the monthly staff meeting of St. Joseph's Hospital on April 11th and participated in the discussion.

DR. R. L. ALEXANDER, of Ontario, Calif., formerly located in Tempe, Ariz., was a visitor in Phoenix and vicinity recently.

DR. JAMES VANCE, of El Paso, participated in the Southwestern Golf Tournament in Phoenix recently. The medical golfers all had to turn their clubs upside down and yield the palm to an eighteen year old high school boy, who carried off the championship.

DR. ELLIOT G. COLBY, of Yuma, announces his removal to San Diego, where he will be located in practice in the future.

DR. H. K. BEAUCHAMP, of Phoenix, has been appointed City Health Officer, in the office vacated by the recent death of Dr. L. D. Dameron. Dr. Beauchamp comes to this office with experience having once served in this capacity for a period of five years.

DR. H. A. HARRIS, of Empalme, Sonora, has been appointed Chief Surgeon of the Southern Pacific Railroad Company of Mexico, vice Dr. E. C. Houle, who has resigned. With the opening of the through Southern Pacific line along the west coast to Mexico City, this route will become a very important commercial line and undoubtedly a favorite one for tourists.

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NEW MEXICO MEDICAL SOCIETY FORTY-FIFTH ANNUAL MEETING

Carlsbad, May 9, 10 and 11.

Few states in the union can offer to its visitors more scenic marvels or places of historic interest than can New Mexico. Whether one is interested in prehistoric man, the original American, or the first white settlers on this continent, New Mexico is well to the front with its claims for places of interest and historical value.

This year the convention will be held in Carlsbad, with one of the scenic wonders of the western continent as a special attraction. The great Carlsbad Caverns, now established as a National Monument under the National Park Service, will furnish this special feature. In order that all may have the privilege of enjoying this scenic attraction, one entire day will be devoted to visiting the Cavern, the convention gathering of that day being held at the entrance to Big Room, which is nearly two miles from the natural opening.

Carlsbad Cavern National Monument is about twenty-five miles from Carlsbad and is reached over a beautiful mountain road. The Cavern is said to be the largest cave in the world, with the most beautiful structures. The first two miles of the Cavern are electrically lighted.

The Carlsbad Mineral Springs, which feed the famous bathing beach, represent another attraction which will be available for the enjoyment of the visitors and members. They are urged to bring bathing suits. These mineral springs, with the climate of Carlsbad, have made this section a famous health resort. The spring waters have an analysis closely approximating that of the waters of the famous spa at Karlsbad in Bohemia.

The medical profession of the Pecos Valley in New Mexico are making elaborate plans for the entertainment of the members of the Society and the visitors. By utilizing these natural features, coupled with their well known hospitality, they will doubtless make this meeting one long to be remembred by those who have the foresight to attend.

The following outline of the scientific program is not complete, but demonstrates that the usual excellence of this Society's presentation will be maintained:

PROGRAM

DR. CARY B. ELLIOTT	Raton, New Mexico
President's Address: "Pioneers in the Medical History of New Mexico."	
DR. F. M. POTTENGER	Monrovia, Calif.
"Present Day Conception of Clinical Pulmonary Tuberculosis."	
DR. A. W. MORTON	San Francisco, Calif.
"Spinal Analgesia."	
DR. A. C. SCOTT	Temple, Texas
"High Mortality in Malignancies and its Reduction."	
DR. F. D. VICKERS	Deming, N. M.
"Artificial Pneumothorax, with X-ray Illustrations."	
DR. G. WERLEY	El Paso, Texas
"A Review of Four Hundred Postmortems with Reference to Cardiovascular Syphilis, with Lantern Slides."	
DR. A. R. HATCHER	Wellington, Kans.
"Urological Cases Frequently Diagnosed as Other Disturbances."	
DR. ROBERT O. BROWN	Santa Fe, New Mexico
"The Relations of the Department of Public Welfare, the Medical Profession and the Public."	
DR. KELVIN D. LYNCH	El Paso, Texas
"Non-Calculous Ureteral Obstruction, with Lantern Slides."	
DRS. C. P. and W. L. BROWN	El Paso, Texas
"Postoperative Use of Duodenal Tubes."	
DR. CARL MULKY	Albuquerque, New Mexico
"Hilum Tuberculosis in the Adult, with Lantern Slides."	
DR. W. T. JOYNER	Roswell, New Mexico
"About Medical Legislation in New Mexico."	

CARLSBAD CAVERN CURTAIN FORMATION

(Copyrighted by the A. T. & S. F. Ry. Co, courtesy of Carlsbad Chamber of Commerce.)

One of the marvellous formations in this great cave, the largest yet explored in the world.



CARLSBAD CAVERN

(Copyrighted by Ray V. Davis,
"THE ICE CHAMBER"

Carlsbad; courtesy of the Carlsbad Chamber of Commerce.)

This is one of the curious and unusual spectacles to be found in these caves, where the giant icicles take the place of the ordinary stalactites.



"THE MOST INTERESTING SECTION OF AMERICA."

Thus has the section of country about Carlsbad, N. M., been described, and it is becoming one of the favorite haunts of the tourist from all over America. And Carlsbad can make out a true bill for this claim on any one of several counts.

Historically, it can present its reminis-

cences of Geronimo, Billy the Kid, the Forty Niners, and many other pioneers, with the background of the Conquistadores who found in the Pecos Valley a favorite route of travel north and south. The botanists find here a land unlike any other with its five hundred or more varieties of cactus. The geologist and archeologist find here a land unlike any other with its mountains honeycombed with caverns of the basket makers who lived there probably four thousand years ago. The health seeker finds, in addition to the natural climate

common to most of New Mexico, great mineral springs with mineral content similar to those of the famous Karlsbad Spa in Germany. So abundant is this water that it forms a great bathing pool, three miles long

Chief among the attractions of Carlsbad for the tourist, or other visitor, is the Carlsbad Cave National Monument, with

the world's largest and most beautiful cavern. These caverns will be found described in the National Geographic Magazine for January, 1924, and September, 1925. With the electrical lighting installed by the National Park Service, which maintains trained guides to insure the full enjoyment of these wonders, the beautiful and startling structures can be fully enjoyed in comfort and safety. The accompanying illustrations show two of the many places of interest found in these great caves.

BUTLER GILBERT FOX

In the death of Dr. Butler G. Fox, of Globe, Arizona, on February 12th, Gila County lost her pioneer physician and the Arizona State Association witnesses the passing of another of the organizers of that body. In the early annals of the Association, the name of Dr. B. G. Fox frequently appears. For thirty-five years he has been located continuously in Globe and witnessed many transitions in the community and professional life of that mining metropolis.

Dr. Fox was a resident of Globe before studying medicine, being at one time Clerk of the Superior Court and then County Recorder. He studied medicine in the University of Louisville School of Medicine, graduating in 1892, and returning immediately to Globe for the practice of his profession. Several years ago, he was made joint county and city health officer, and devoted his entire time to that work, being the only full time health officer in Arizona. In this capacity he served as superintendent of the Gila County Hospital, until the re-organization of that institution recently into a general hospital. He was still city and county health officer at the time of his death on February 12th, from arteriosclerosis terminating in pneumonia. He was 73 years of age.

McDURHAM D. TAYLOR

Dr. M. D. Taylor, of Aztec, N. M., died on March 16th, in Santa Fe, N. M., while serving as a member of the Legislature.

He was born in Kentucky in 1867, graduated from the Kentucky School of Medicine in 1894, and came to New Mexico in 1905. He served as a member of the New Mexico Constitutional Convention in 1910; was formerly a member of the New Mexico Board of Health and Medical Examiners and the State Board of Education. He was County Health Officer of San Juan County from 1911 to 1927.

While serving as a member of the New Mexico Legislature, he was stricken with

pneumonia and died after a brief illness of five days.

H. W. PURDY

In the death of Dr. H. W. Purdy, of Nogales, which occurred recently, one of the pioneer medical men of Arizona was lost. Dr. Purdy had been in practice since 1882, and had been located in Nogales since 1897. The high esteem in which he was held by the profession of his community is attested by the following resolutions which were passed by the Santa Cruz County Medical Society and ordered printed:—

WHEREAS, God in His infinite wisdom has taken from amongst us our dearly beloved friend and confrere, H. W. PURDY, we must pause to pay our most sincere respects to one whose passing on has created a great void, not only in the profession he honored, but in the civic life of Nogales, where for many years he has made his daily contributions to the welfare and relief of the suffering and afflicted without thought of self. His has always been a life extending charity, of profound faith in his fellow-men, and by reason of his kind, patient and sympathetic attention, he at once inspired those about him with confidence and respect. And

WHEREAS, knowing of the exceptional professional qualities possessed by DR. H. W. PURDY, in matters of diagnosis and treatment, which always imbued us with confidence in his mature judgment and counsel, we desire to publicly express the fact that in his passing, the medical profession has lost one of its foremost and able members, and

WHEREAS, in the death of Dr. H. W. PURDY, there is left in deepest sorrow and grief, a wife and companion of many years, and a daughter, it is to these that we most earnestly extend our deepest sympathy, in this their hour of greatest grief.

THEREFORE, be it resolved, that this resolution of sincere sympathy, adopted at a special meeting of the Santa Cruz County Medical Society, be spread upon our minutes and a copy presented to Mrs. H. W. Purdy and daughter.

Signed

W. F. CHENOWETH.

V. A. SMELKER.

A. L. GUSTETTER.

B. M. RICHARDS.

T. B. FITTS.

A. H. NOON.

STAFF MEETING, EL PASO CITY-COUNTY HOSPITAL.

The staff of the El Paso City-County Hospital met March 16, 1927, being called to order by the chairman, Dr. E. J. Cummins. The following were present: Drs. Cummins, Strong, Casellas, Rheinheimer, Liddell, Von Almen, Barrett, Molloy, Vandever, Mason, Stevenson, Neil, Gallagher, Long, Outlaw, Armistead, Werley, Thompson, Richmond, Rigney, Waller, and Smith.

DR. LIDDELL reported the following case of pulmonary tuberculosis from his service:

The patient was a man, aged 26, who had had influenza in 1918 and again in 1921. After the latter attack he developed a cough and profuse expectoration, and had hemoptysis. There was considerable loss of weight. After eighteen months in hospitals he was discharged as arrested. On admission to the City-County Hospital, examination

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of the chest showed increased fremitus, dullness on percussion, and cavernous breathing at the right apex. Diagnosis: unilateral pulmonary tuberculosis with advanced cavitation. The patient refused thoracoplasty which was advised. He was discharged improved.

The following deaths which occurred during February were discussed:

DR. RIGNEY: A girl, aged 8 years, was admitted December 5 with a broken clavicle. The accident occurred eight days before admission. There was great pain and inability to move the arm. On the fifth day patient went to bed. On admission the arm was badly swollen and the patient was delirious. Temperature 103.3. X-ray showed a fractured clavicle. The fracture was reduced and held in place by adhesive plaster. The urine was negative. The white blood count was 18,500 with 48 per cent polys. The patient developed pneumonia and died the next morning. Autopsy was not performed, and it is uncertain whether she died of pneumonia or streptococcic infection.

A boy, aged 6 years, was run down by an automobile and was unconscious on admission. X-ray showed fracture of both humeri, both clavicles, right and left fifth ribs, and seventh right rib. Patient died shortly after admission.

A man, aged about 40, was found unconscious by the police. His urine contained a trace of albumen, but was otherwise normal. Hemoglobin, 75 per cent. White blood count, 10,600. Temperature, 99. The tongue was lacerated and swollen. Pulse 78. Respirator 12. Ice was applied to the head, and the bowels were flushed. The tongue was repaired under anesthesia. The patient died eighteen

days after admission. Autopsy showed fracture of the skull, involving both frontal sinuses; two fractures on the floor of the skull; a small hemorrhage on the posterior surface of the cerebrum. There was no sign of internal injury to the brain. Pericarditis, pleurisy, and multiple skin abscesses were also found.

DR. GALLAGHER: A negress was admitted with signs and symptoms of salpingitis. Laparotomy was performed and the tubes removed by sharp dissection. The respiration went bad after the operation, and stimulants were of no avail. The cause of death is not known.

A case of uterine fibroid. Hysterectomy was performed. The day following the operation the temperature rose to 103.6. The next day it was 102.2. Hypodermoclysis was given. The patient died. Autopsy showed peritonitis with a quart and a half of pus in the abdomen. The pulse had been good after the operation, but went to 104 just before death.

DR. MOLLOY: A woman was admitted with a foul vaginal discharge and a cauliflower growth on the cervix. Section showed carcinoma. Complete hysterectomy was performed. The patient was dismissed from the hospital and told to report for radium therapy, but failed to do so until the growth had become too extensive for therapy. The case was discussed by Drs. Waller, Casellas, Long, Richmond, Gallagher, and Cummins.

DR. STEVENSON: A woman, aged 68, was admitted to this service February 15 with a diagnosis of intestinal obstruction. The illness began

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These photographs are used through the courtesy of Northwestern University Medical School, Chicago. Above is a view of one section of the Physical Therapy Clinic, showing three of the treatment cubicles.

Physical Therapy Apparatus Designed to Medical Ideals

IN the Dec. 11th issue of the Journal of A. M. A. were printed the Official Rules of the Council of Physical Therapy of the American Medical Association. These official rules "have been adopted primarily with the view to protecting the medical profession and the public against fraud, undesirable secrecy and objectionable advertising in connection with the manufacture and sale of apparatus and methods for physical therapeutic treatment."

Quoting further from the A. M. A. Bulletin of the House of Delegates: "It is hoped that the medical profession will give consistent support to this effort for sound therapy. Physicians may well follow in their choice of apparatus and in their work the opinions of the Council on Physical Therapy as to what is reliable."

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the night before with pain in the epigastrium and vomiting. There was no history of previous abdominal or pelvic pain. This patient died before Dr. Stevenson saw her. The final diagnosis at autopsy was gastric ulcer with perforation, and acute hemorrhagic pancreatitis.

DR. THOMPSON: Patient gave a history of pain in the abdomen and diarrhea eight months ago and a cold two months ago, after which the feet began to swell. Had nausea and headaches. Was comatose on admission. B. P. 96/52. The temperature was subnormal. Heart and lungs negative. There was ulceration of the mouth and throat. The cervical glands were enlarged. There was a foul odor from the mouth. The urine was normal except for hyaline and granular casts. A smear from the ulceration showed diphtheria bacilli and the organisms of Vincent's angina. A cervical gland was removed and examined, and proved to be tuberculous. The blood Wassermann was negative. Diphtheria antitoxin was given. Two days later the culture was negative. Neoarsphenamine was administered. There was no improvement in the ulceration. X-ray examination failed to show any signs of pulmonary tuberculosis. The patient died. Autopsy was not performed.

A man was admitted with severe itching and many scratch marks on both legs and feet. The mind was wandering. The heart and lungs were negative. The urine contained albumen and hyaline and granular casts. There was very little edema. Diagnosis: chronic nephritis. Autopsy showed the kidneys small and pale, with narrow cortex. The lungs were congested.

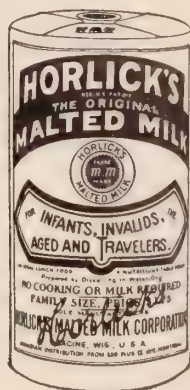
A woman was found unconscious. She had had headaches for several days and spots before the eyes. Had had seven pregnancies. B. P. 120/72. Pupils were equal. There was severe dyspnea. The apex of the right lung was dull on percussion, and rales were present. The urine contained a trace of albumen, and there were some red blood cells. The spinal Wassermann was negative, but the cell count was 30. The blood urea was 38 mgms. per 100 c. c. The patient died in a short time. Autopsy showed adhesions in the right pleural cavity, small consolidations in both lungs, and adhesions on the surface of the brain. Diagnosis: syphilitic meningitis and pneumonia.

DR. SMITH: A middle aged man had had a destructive ulceration of the penis and entire genital region for several months. The penis was entirely destroyed, and the inguinal glands were large and suppurating. The Wassermann was negative. Smear from the lesions failed to reveal Donovan bodies. Epithelioma and chancreoid were each considered for diagnosis. Biopsy report was prickly cell epithelioma. Secondary infection accounted for the suppuration of the glands. Deep x-ray was given as a palliative, with no hope of cure. The patient died two weeks after admission, probably of internal metastases. Autopsy was not performed.

A young woman, who was known to be an advanced cardionephritic, developed a severe bullous eruption on the arms, forearms, chest, shoulders, and face. She had been taking for two days a preparation which was found to contain 10 gr. of potassium iodid to the dose. Diagnosis: dermatitis medicamentosa from iodine. Cardionephritics are especially liable to iodid and bromid eruptions. The urine contained albumen and casts. There was an aortic lesion present. Treatment consisted in rest in bed and the local application of Burrough's solution. The condition of the patient was good and the skin lesions were clearing rapidly, until on the seventh day in the hospital she suddenly died. No autopsy was performed, as the

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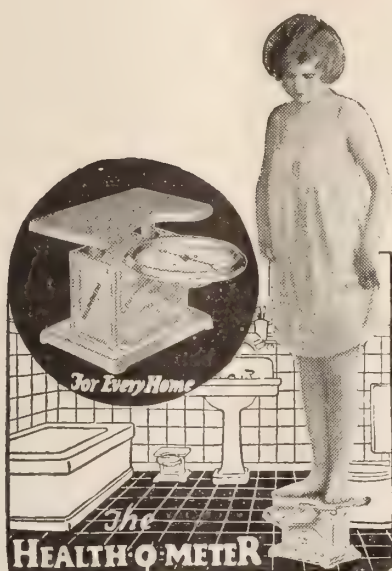
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relatives objected. Death is thought to have been due to heart failure.

The staff adjourned at 10:10 p. m.

L. M. SMITH, Secretary.

EL PASO COUNTY MEDICAL SOCIETY

March 7, 1927

At this meeting, DR. J. W. LAWS presented a report of a case in which the diagnosis was tuberculous meningitis. This case was discussed by several of the members, with some criticism of the diagnosis. The paper with summary of the discussions will be published in a future issue of this journal.

DR. W. E. VANDEVERE presented a paper on "The Bronchoscope and its Uses." The discussions on this paper will also be published with the paper, in a future issue of this journal.

March 14, 1927

DR. HARRY LEIGH reported a case of pityriasis rosea; a condition which is very rare in children. The eruption was rather extensive over the thighs and abdomen.

Dr. Leslie Smith, in discussing the case, pronounced this a typical case of the disease, emphasizing its rarity, particularly in children.

DR. J. W. LAWS presented a case of arthritis deformans in a white male of fifty-eight years. In 1922 he developed pain and tenderness in the shoulders. The condition was progressive, continuing with such severity that at the end of nine months he had to quit work. In July, 1926, he developed empyema following influenza. Ribs were resected and the empyema drained. Following this all the joints became involved, patient de-

veloping a typical case of arthritis deformans. There was extravasation of synovial fluid from both shoulder joints into the deltoid muscles.

DISCUSSION

Dr. J. Anderson stated that he had gotten most satisfactory results from the use of oxyiodide combined with radiations from the carbon arc lamp.

Dr. G. Werley voiced his skepticism about removing foci of infection as a satisfactory treatment of arthritis. He stated that it was more often a failure than a success. He further stated that if absorption through lymphoid tissue of infection was the cause of arthritis, a most fertile field would be in the intestinal tract, which is so rich in lymphoid tissue, particularly around the cecum.

Dr. Love recounted a case of arthritis in a child, all symptoms disappearing after tonsillectomy, and patient has remained well for three years.

Dr. E. J. Cummins believed that removal of the focus of infection, if early, might abort the disease. But after the disease has become systemic, with joint changes, the condition is comparable to metastasis in cancer, and the removal of the primary focus could not cure the disease.

Dr. Harry Leigh urged more careful inspection of children before making a diagnosis of rheumatism, citing a case that was referred to him for treatment, examination revealing only flat feet.

In closing, Dr. Laws mentioned the frequency with which arthritis was associated with tuberculosis.

DR. P. R. CASELLAS presented a case of a Mexican boy of seventeen years, referred to him



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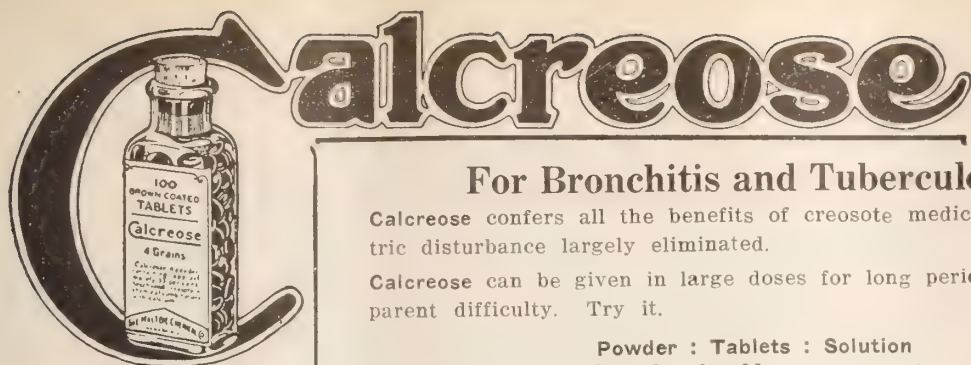
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by Dr. Werley, in 1924, with large indurated area over the sternum, with multiple discharging sinuses. Blastomycetes were found in the pus. The case has been radiated with ultra-violet light from a mercury quartz lamp twice weekly, since 1924. The lesion is nearly normal in appearance at this time, only two sinuses remaining.

Dr. Werley, in discussing the case, stated that he had shown a number of cases of blastomycosis before this Society in the last fifteen years, he and his wife, Dr. Sweet Werley, having worked out a number of cases. They were unable to grow a fungus of Blastomycetes in many cases, but succeeded in five.

DR. F. P. MILLER reported a case of tuberculous osteomyelitis of the skull in a man fifty-one years old. He has had a discharging ear and several open sinuses of the region about the ear since childhood. X-ray of the skull showed typical mottled appearance of the disease. Applications of alkamite had produced a decided improvement in the case. In the discussion Dr. Casellas doubted the diagnosis of tuberculosis, stating that the x-ray findings were not typical.

Dr. Fenton, of Des Moines, Iowa, was a guest of the society, and gave demonstration of the prone pressure method of artificial respiration. He was in El Paso giving emergency first aid demonstrations from his Red Cross railway car.

March 21, 1927

DR. F. D. GARRETT presented a case of Henck's purpura. Case had several hemorrhages from the stomach, and had the petechial skin eruption, the arthritic symptoms and a nephritis with albumen and casts. He stated the treatment was symptomatic. He stated that the blood picture in this case was normal, with the exception of a low platelet count.

Dr. E. A. Duncan stated that as paradoxical as it might seem, the use of sodium citrate intravenously had proven some benefit in these cases. He stated that at the Mayo Clinic they were removing the spleen in all these cases.

Dr. Weller said that splenectomy was indicated in all these cases, as it was the agent that destroyed the blood platelets. He recommended that fragility test should be done on these cases.

DR. J. G. WILSON read a paper, "The Essential Functions of Health Organization." This paper will be read before the Texas State Medical Association, and for that reason will not be reviewed in these columns until after its appearance in the State Medical Journal.

Dr. J. W. Laws suggested that this paper should be given to the public press after its appearance in the official organ.

Dr. G. S. Luckett, of Santa Fe, New Mexico, and State Health Officer for New Mexico, was present, and discussed the paper. He extended very cordial invitation for the society to attend the New Mexico State Medical Association, to be held at Carlsbad.

DR. F. P. MILLER read a paper entitled "Avulsion of the Phrenic Nerve." This paper is also to be read before the State Medical Association, and will not be reviewed here.

March 28, 1927

DR. ANDERSON presented a case of idiocy in a child, the etiology of which is possibly syphilis.

CAPT. F. C. PRATT presented three cases of paresis. These cases were discussed by Drs. McCamant, Werley, Wilson, Rogers and Major Scott.

DR. S. A. SCHUSTER read a paper entitled, "Lipoma of the Orbit," which will be presented before the Texas State Medical Association when it meets in El Paso April 26 to 28.



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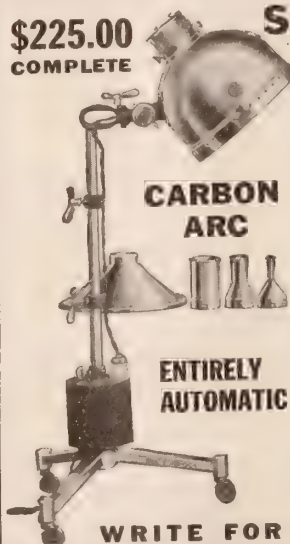
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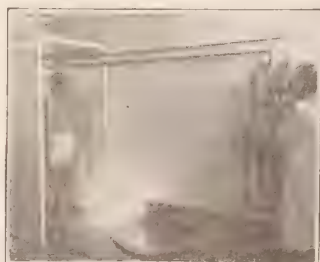


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CONGENITAL VALVULAR OBSTRUCTION OF THE POSTERIOR URETHRA

CHARLES S. VIVIAN, M. D., F. A. C. S.
Phoenix, Arizona

Address of the President, before the Thirty-sixth Annual Meeting of the Arizona State Medical Association, held at Yuma, Ariz., April 21 to 23, 1927.

Not least among the causes of nocturnal enuresis in male children is congenital valvular obstruction of the posterior urethra. It is of the paradoxical variety and bears out the axiom that a full bladder is always a leaky one. With this axiom in mind the pathology attendant upon the congenital malformation under discussion is more easily appreciated. The bladder leaks because it is over-distended; it is over-distended because there is an obstruction which interferes with its proper emptying. This obstruction is brought about by the presence, in the posterior urethra, of congenital valves very much like the valves in the veins, which permit the passage of instruments into the bladder but balloon out and obstruct the outflow from that viscus.

First mention of congenital valve in the urethra is found in the work of Longenbeck published in 1802. Thirty years later, Valpeau and Guthrie, working independently, described postmortem specimens showing the effect upon the upper urinary tract of back pressure due to these valves. Eigenbrodt, in 1891, is given credit for being the first to recognize the condition in the living individual. Knox and Sprunt first described the condition in America in 1912 and Young, in the next year, performed the first successful operation for its correction. The honor of first describing the condition in Arizona belongs to Dr. W. G. Schultz, of Tucson, for his article published in *Southwestern Medicine* in September, 1925. Altogether there have been fifty-seven cases reported in America to date.

There is no consensus of opinion regarding the etiology of this condition. In 1903, Bazy called attention to the fact that, in the latter part of embryological development, the urogenital membrane is found at

the location of the verumontanum, in the posterior urethra. Since congenital valves are usually found in this location, it is reasonable to assume that persistence of this membrane is responsible for their occurrence. Lowsley, in 1914, basing his opinion on the research work he did in the embryology of the prostate, advanced a theory of developmental anomaly of the Wolffian and Mullerian ducts. None of the theories advanced to date, however, serve to explain completely all of the different types of congenital valve formations.

The first of these, or type one, presents, upon examination, a ridge on the floor of the posterior urethra, beginning at and continuous with the verumontanum, running forward to divide at the bulbo-membranous junction. The halves, separating, are attached as thin membranes to the urethra in varying degrees of its circumference. In type two, the extension of the membranous sheets is backward from the verumontanum toward the internal sphincter, where they are attached to the urethra. The third type is not continuous with the verumontanum and may be found at any point in the posterior urethra. This variety presents the appearance of a diaphragm spread across the lumen of the urethra and pierced by a passage of variable size, from pin-point caliber to a diameter which converts the valve into an incomplete crescent or semi-circular folds on either side the urethra. The concavity of this diaphragm is directed toward the bladder, which allows the valve to be flattened against the urethra by instruments passed into the bladder but distends and produces obstruction when the urinary stream is directed against it.

The valvular obstruction described by Dr. Schultz, belongs to the third variety. As a natural consequence of the back pressure and in direct ratio with it, pathology is developed in the urogenital tract above. The urethra above the valve is enlarged. The musculature of the bladder is hypertrophied and presents the typical trabeculation, in

no wise different from those seen behind a hypertrophied prostate. The capacity of the bladder is increased and, as the condition continues, hydro-ureter and hydronephrosis develop. With this development, the bladder capacity becomes less. In young individuals, this accumulation in, and dilatation of, the ureters and kidney pelves, produces the typical "pot-bellied" child who is frequently erroneously treated for conditions outside the urinary tract.

The symptoms produced by the presence of the valves differ in no particular from those produced by any obstructive lesion. There are hesitancy, small stream and dribbling. Back pressure, bringing with it failure of renal function, as evidenced by dry, coated tongue, anemia, anorexia and loss of weight, is next in order. Infection, with chills, fever, nausea, vomiting, toxemia and acidosis, follows naturally. Tentative diagnosis may frequently be made from the history. Difficult urination, incontinence, without pain, and abdominal distention in a male child, are very suggestive.

Patients suffering from severe or nearly complete obstruction, if uncorrected, do not attain adult life. Indeed, numerous still-born infants have been found to have valvular obstruction. At the other extreme of pathology are the cases in which slight obstruction is demonstrated during urethroscopic examination occasioned by persistent urethral discharge or other indication. Modern instruments are practically indispensable to complete diagnosis. The McCarthy pan-endoscope gives a beautiful picture of the posterior urethra and of any abnormality which may be present. In the hands of the writer, however, the older McCarthy cysto-urethroscope has proven the most satisfactory. By attaching a catheter at its open end to the tunnel opening of the McCarthy instrument, a moving picture of the act of micturition may be obtained. A full stream flowing into the urethra from a reservoir at a sufficient height, the eye of the catheter being smaller than the lumen of the tube, produces enough back pressure to distend the urethra slightly. When the catheter is pinched, the valves are swept back flat against the urethral wall and the bladder is filled, then when the pressure on the catheter is relieved, the valves will be seen to snap out into and partially obstruct the lumen of the urethra. In Schultz's case the same picture was produced by a stricture anterior to the valve. The degree of damage to the structures above the obstruction, is, of course, actually determined by the usual combined cystoscopic and x-ray

procedures and the severity of renal impairment, by blood chemistry and 'phthalein elimination. Complete cystoscopic and x-ray examination may, however, be impossible until treatment has made possible the passage of an instrument into the bladder. Young has contrived a special small-sized punch by means of which he removes the obstruction in young children.

In the case reported by Dr. Schultz, the valves were cut in their middle by scissors. In the cases treated by the writer, the valves were destroyed by the fulgurating electrode. Some cases of the second variety have been reported where the obstruction, being close to the bladder neck, necessitated supra-pubic approach. Young has devised a perineal operation. Both of these procedures have been largely abandoned, however, since the advent of more modern urethroscopic instruments. There occurs in the literature no report of destruction of a valve by the radio knife of Keyes and Collins, but it would seem that this method could be used satisfactorily.

The prognosis depends entirely upon the degree of damage which has resulted in the upper urinary tract and the conclusion naturally follows that it behooves us, as medical men, to be on the look-out for this condition and to apply the remedy as soon as the diagnosis is made.

BONE TUBERCULOSIS

EDGAR H. BROWN, M. D.
Phoenix, Arizona

Read before the Twelfth Annual Meeting of the Medical and Surgical Association of the Southwest at Tucson, Ariz., Nov. 11 to 13, 1926.

In the treatment of bone tuberculosis, our conception of the patient's condition should be broadened—not thinking of him as one suffering from a local manifestation of the disease, but as one in whom the bone focus gives us direct proof of a tuberculous infection of the body, and that this infection is progressive. Bone tuberculosis, as a rule, is secondary. The primary focus may be obscure, as a deep-seated lymphatic infection that has not taken steps to call attention to itself, as does the bone after it has become involved.

In looking over the medical history of the past twenty-five years, we find that there has been a marked change in the conception, care and treatment of these cases. In the earlier days the disease was not recognized until the destructive changes were well advanced, the patient suffering continual pain, the amount of deformity gradually increasing, and abscess cavities profusely discharging through open sinuses;

all of these contributed to the early death of the patient.

Even at the present time there are cases scattered over the country that are re-living the tragedies of yesterday. With our present knowledge, there should be no delay in diagnosis, or the institution of treatment that will relieve the patient of his pain, stop the advancement of the disease, and prevent abscess formation and deformity.

It has been shown by laboratory tests that, in bone disease, the virulence of the tubercle bacillus remains practically constant, while, on the other hand, the rejuvenating powers of the human are variable; thus it can be seen that, under favorable circumstances, the patient has the advantage, while under opposite conditions, the advantage is with the bacillus. Therefore, it should be the aim of our treatment to restore the patient's lost vitality to such an extent that he can successfully combat the disease. If this is not accomplished, the disease will be a long-drawn-out affair, that will eventually give the tubercle bacillus the decision.

Early and accurate diagnosis must be made if we are to cure our patients without deformity or crippling defects. If the disease is delayed until bone destruction had advanced and joints become invaded, then no amount of care and treatment can fully restore the diseased joints, and we will have a relative degree of permanent disability.

In the very early stages, the x-ray has but little diagnostic value, but a careful physical examination will detect muscle spasm, muscle atrophy, tenderness around joints, limitation of joint motion, a tendency to limp or protect the joint against sudden jars. These latter symptoms may be present without producing pain or discomfort. All of these symptoms are detectable before there has been sufficient bone destruction to make it visible with the x-ray. It is my belief that one is justified in making a tentative diagnosis of tuberculosis in all children who show a progressive low grade arthritis of one of the larger joints, and that it is the duty of the surgeon to take advantage of such a diagnosis, and not await the actual confirmation of the disease by visible bone destruction. If he does not do this, the patient loses his best chance of retaining a functional joint. Unfortunately for the patient, he is seldom seen by the surgeon, or a diagnosis of his condition is not made in the pre-destructive stages.

In the treatment of bone and joint tuberculosis, as previously stated, it is essential

that we realize that the local trouble is often a secondary manifestation, and that the treatment indicated in raising the patient's general vitality is the same as employed in other tubercular conditions. As soon as the diagnosis is made, the patient should be placed at absolute rest in the open air, kept warm, relieved of all strain and movements that produce muscle spasms, with local circulation stimulated, and mixed infections avoided. None of the proven principles of treatment should be neglected in favor of open air, sunlight, or operative procedures, which some are prone to consider as short cuts; these procedures are essential to the cure of our patients, but their importance should not overshadow the less indispensable principles of the treatment, which are accurate splinting, time and rest. Tubercular inflammations are obstinate, and have a tendency to relapse; for this reason it is imperative that our patients be placed at absolute rest, where they will be protected from external injuries and reflex muscular spasms. The prevention of deformities is assured only by proper mechanical splinting. Patients thus treated, with the addition of open air, sunshine, cod liver oil and good food, have the best chance for complete recovery.

Good feeding does not mean an excessive amount of food, but an adequate amount, appropriate to the time of the year, well cooked and put up in an enticing manner. It should not be our aim to over-fatten the patients, but to keep them in good physical condition.

The open air and sun play an important part in the cure of bone tuberculosis, and a fair trial will convince the most skeptical of their worth. It may be questionable as to which one plays the major role, or just how their beneficial action is brought about, but we do know that our patients thrive and improve under their combined influence.

SPINE

In tuberculosis of the spine, the infection starts first in the central portion of the vertebral body, and then gradually spreads, softening and destroying its anterior portion and the adjacent intervertebral disc.

The destructive process is hastened by the reflex, spastic, compressing action of the psoas, and other anterior spinal muscles. This compression of the diseased vertebrae is assisted by the body weight when in the upright position.

As the fronts of vertebrae are compressed, the spinal processes are separated from one another and pushed backwards, together with the neural arch, thus produc-

ing the kyphotic deformity. This deformity will be in direct proportion to the number of vertebrae involved and the extent of the destruction.

The treatment of spinal tuberculosis is carried out with the patient in the recumbent position. By this method we are able to remove the direct body weight from the diseased area, separate the vertebral bodies by hyper-extension, overcome muscle spasms, and prevent or reduce the amount of deformity.

The recumbent position can be maintained upon a mattress, with suitable padding to give the desired degree of hyper-extension to the spine, or upon a modified Bradford frame, but neither of these, we think, is as suitable as the molded plaster bed. These beds are not only comfortable to the patients, but give them a greater sense of security.

The patient should be kept on his back until the disease has become quieted; then, in order to break the monotony, as well as to apply direct heliotherapy, he is at intervals placed upon his abdomen, the position of hyper-extension being maintained by resting upon the elbows, or upon a wedge-shaped cushion placed under the chest. The length of time and frequency with which he is permitted in this position are decided according to his condition.

As time goes on and the patient improves, the surgeon's responsibility does not grow less, but, in reality, increases, for it is up to him to make the decision as to when improvement has advanced sufficiently to enable the patient to be up and around in a brace, and as to the time when the brace can be safely discarded, for a relapse at this time would be a calamity.

Surgery as an adjunct to the treatment of spinal tuberculosis, is becoming more popular as time goes by. This does not mean that every tubercular spine should be operated on, but it does mean that the majority of cases in later childhood and adult life would be benefited by surgical intervention. The ultimate results hoped for in the treatment of these cases is a fixation of the quiescent spine in hyper-extension, by bony ankylosis; surgery only helps to make this fixation positive.

Before doing operative work upon the spine, be sure to give the disease plenty of time to quiet down and to become localized. If this rule were carried out more frequently, we would see a far less number of cases in which the disease has advanced beyond the site of operation.

HIP

The general principles in the treatment

of acute hip joint disease are the same as those used in the spinal cases. Treatment must be started early if we are to have any chance of preserving normal joint function. By early, we mean before there has been sufficient destruction in the epiphysis to show up on the x-ray film, and especially before the articular cartilage has become involved. In order to emphasize this statement, I wish to quote Dr. DeForrest P. Willard, who states that, by a study of two hundred cases at the University Hospital, of those cases in which treatment began within three months of the onset of symptoms, 80 per cent were quiescent at the end of five years, with no deaths; 71 per cent had good functional results. Of those who did not receive treatment until one year after onset, only 38 per cent were quiescent at the end of five years, with a mortality of 11 per cent, and only 10 per cent showed even fair ultimate function.

The pain in tuberculosis of the hip is frequently severe, and is due to the spasmodic contraction of the surrounding muscles. Fortunately, this spastic condition, which promotes destruction by pressure and irritation, is easily overcome by traction in the long axis of the limb, with the occasional addition of lateral traction applied to the upper part of the thigh.

In the extension of the limb, the leg should be raised on a pillow sufficiently to overcome any abnormal lordosis. The horizontal plane of the iliac spine should be at a right angle to the midline of the body. This is accomplished by adduction, or abducting the limb, as the case may be. Often to retain this position it becomes necessary to apply traction to the opposite limb. It is also necessary to maintain the limb in the proper degree of inward rotation, as, if this is neglected, you will soon find your limb practically fixed, by contracted tissue, in extreme outward rotation.

After the acute stage is passed and the muscle spasms have quieted down, it will then be necessary to decide the method of fixation to be used during future treatment. If the patient is one you can control and keep quiet in extension, then that is the method one should use, as it will permit the direct application of the sun to the affected limb; but often this is not the case, for as soon as the patient is free from pain, neither he nor his parents can further realize that it is essential to keep the diseased joint quiet. In these cases it is then best to place them in a long spica cast that reaches from midbody to tip of toes.

In the treatment of hip cases where there is even moderate joint destruction,

the aim of the surgeon is coming more and more toward early ankylosis, for in ankylosis lies the patient's greatest hope. True bony ankylosis in a tubercular hip is difficult to obtain by nature's methods alone.

In the past, surgical intervention has aided but little toward the desired results. Resection of the femoral head with cleaning out of the acetabulum, has been abandoned. The method of transplanting tibial grafts has proved a disappointment in the majority of cases, as the site of operation would either become infected, or later the graft would become broken or absorbed.

The future surgical outlook in these cases seems very bright, owing to experimental work done during the past few years by Hibbs and Hass, each working independently of the other. Their work has given us an operation which consists of forming a strong bony bridge, extra capsular, across the joint, reaching from the neck of the femur to the ilium. This is done by a transposition of the anterior three-fourths of the greater trochanter, together with two inches of the cortex of the femur, without disturbing the attachments of the gluteus medius or minimus muscles; the corticle end of the graft is inserted under a raised portion of the upper rim of the acetabulum and ilium, while the base of the transposed trochanter rests in close contact with the cancellous bones of the femur neck.

The union of the graft with the ilium and femur appears to be primary, and is of sufficient strength to permit walking in a plaster spica at the end of three months.

The older cases that have become fixed in an adducted or flexed position can later be corrected by a sub-trochanteric osteotomy.

KNEE

Tuberculosis of the knee gives the same general symptoms as those of the hip and spine, and is next in frequency to the hip. The site of the initial lesion is usually in the epiphysis of the femur or tibia, but occasionally is found in the head of the fibula, the patella, and synovial membrane.

Limitation of motion caused by muscular spasm is the most prominent symptom; even in the earliest stages of the disease there will be a slight limitation of extension, and as the disease progresses this limitation increases until we have the characteristic flexion deformity; and then, in the untreated cases, the secondary deformity of outward rotation and backward displacement of the tibia upon the femur.

The conservative treatment of the knee is the same as that of the hip. In the cases

of childhood where the diagnosis is made early, there is a chance of retaining a functional joint, but in those cases where the joint itself has become involved, with moderate destruction of the cartilage, the joint should be opened and the cartilage removed, care being taken to do as little damage as possible to the epiphysis. In the adult, the more radical resection is indicated.

Surgical intervention not only shortens the period of disability, but gives us the best assurance of curing our patients. Abscess formation with discharging sinuses should not be considered contraindicated.

In those cases where deformity has taken place, the first step in treatment is a reduction of that deformity. If this cannot be accomplished by gradual means, then forcible correction by reverse leverage should be used. If the contracture is of too long standing, with a subluxation of the tibia, it will probably be found necessary to do a division of the flexor tendons. Extreme care should be used not to cause a complete dislocation unless an immediate resection of the joint is contemplated. The strengthening of the leg in an old healed case, where the joint has been ankylosed in a flexed position, should be done by a supracondylar cuneiform osteotomy and tendon division, without disturbing the ankylosis.

FOOT

Tuberculosis is not an infrequent disease of the bones of the foot. The infection usually starts in one of the smaller tarsal bones and then spreads. Owing to the number of bones and their numerous articular surfaces, the curing of the disease by conservative methods is difficult, and it is questionable if it is justifiable to attempt it in the majority of adult cases, as time is a great factor. The treatment on an average would extend through several years before the cure would be complete enough to make it safe to use the foot, and then the probabilities are that the foot would not be as serviceable as an artificial one.

If the disease is discovered while it is limited to one of the smaller tarsals, the chances for its immediate eradication, with the preservation of normal foot function, by the complete removal of the diseased bone, are good. If the infection is general throughout the anterior tarsals, without involvement of the astragalus and os calcis, it would probably be best to remove these bones by resection. This would give us a shortened, but usable foot. In the cases where the ankle is involved, the radical treatment would naturally be that of amputation.

TREATMENT OF PULMONARY HEMORRHAGE

VICTOR RANDOLPH, M. D.
Phoenix, Arizona

Read at the Twelfth Annual Meeting of the Medical and Surgical Association of the Southwest, at Tucson, Ariz., Nov. 11 to 13, 1926.

Tuberculosis is the most common cause of pulmonary hemorrhage. This is common experience. It is shown statistically by figures of Stricker (after Cabot) taken from a group of Prussian soldiers, and by Cabot in figures from the Massachusetts General Hospital. In the first group, trauma formed the principal other cause (.01 per cent). In the latter group mitral disease was the next principal cause (34 per cent); the large percentage of cases of hemorrhage due to mitral disease in this group is not surprising since the group is taken from a general hospital. Hemorrhage from mitral disease in the general population is probably not so frequent. Other causes of pulmonary hemorrhage are: bronchiectasis, abscess or gangrene, pneumonia, thrombosis or embolism, aneurysm, trauma, neoplasms, hydatid cyst, syphilis. In the general population, tuberculosis is so predominant a cause of hemorrhage that it must always be ruled out before making another diagnosis.

Conversely, the majority of cases of pulmonary tuberculosis have hemorrhage of some degree at some time or other during their course. It is of interest, therefore, because of its frequency. It is of interest also because of its insidiousness. Hemorrhage may be the first bolt from the blue to a man or woman who has always considered himself well. It lurks as a hidden menace at every stage of the long disease, tuberculosis. It may come at any time to the tuberculous patient who is apparently improving, and may mean a serious setback in his progress. It may come to the case which is apparently arrested, and here again it may mean a return to invalidism, or it may mean speedy loss of life. Hemorrhage may presage a sudden infiltration of a lung which is already damaged, with pneumonic sequelae of tuberculous or pyogenic nature. Finally, it is impossible to foretell with any certainty whether a given hemorrhage will be large or small. And it is this, largely, which gives to the patient that anxiety which he often feels at the onset of bleeding. Few forms of slow death are more terrifying to the patient or to a helpless physician than that by prolonged or gushing hemorrhage.

Various classifications of hemorrhage in tuberculosis have been given. But, for

practical purposes, there are only two main divisions: those arising from large vessels and those arising from small vessels.

Hemorrhages of the first class arise, as a rule, from aneurysmal vessels traversing a large cavity, or from vessels traversing a small cavity or a pulmonary area where necrosis involving the vessel wall has occurred. A comparatively large hemorrhage of this sort may cease temporarily because of pressure on the bleeding vessel through clot formation in the cavity or involved area, but, with softening and partial dislodgment of the clot through coughing, the bleeding may start afresh. Repeated sizable hemorrhages occur unless a sufficiently firm organization occurs in the clot about the vessel to maintain pressure and finally close over the opening. The large fatal hemorrhages are from this type of bleeders. They are more apt to occur in arterial rather than venous stems.

The small-vessel type is more readily controlled by clotting and later organization, but here, again, repeated hemorrhages may occur at shorter or longer intervals by the same process as in the above type. The small veins must close more readily than the small arteries.

Unfortunately, whatever the initial appearance of a hemorrhage may seem to indicate, it is impossible always to decide that a small hemorrhage arises from a small vessel which will readily close over. The internal or concealed hemorrhage may surpass the external, and its extent frequently cannot be determined by physical or x-ray examination. At times it must be that the initial perforation in a large vessel is small and so situated that a clot quickly forms about it. A few hours or days later, the situation may be changed entirely and a large hemorrhage issue from the same vessel. Therefore, every hemorrhage in which free blood occurs must be regarded as potentially serious.

The methods of treatment are, in the first place, physical and physiologic. With these are combined medical, or pharmacologic, methods and, finally, mechanical methods. The last may, in a given case, be the most important.

Rest is the prime consideration. First, I would stress mental rest, for without it physical rest cannot be perfectly maintained. Physical rest comprises the greatest degree of immobility of the body, a minimum of breathing, coughing and talking. Whispering should replace talking. External cold and feeding of small amounts of chipped ice are of value through their sedative effect on the patient's fever and

heart. Food should be limited temporarily to liquids which are readily taken and assimilated.

Medically, a tremendous list of drugs has been used at one period or another in the effort to stem hemorrhage. The one certain drug that remains to us is opium. No other drug produces such quick relaxation of mind and body, with easing of respiration and quieting of cough, in such a large percentage of people. In most cases, morphine is preferable in dosage sufficient to produce the physiologic effect. A few people do not tolerate morphine; for those, codein or some non-narcotic sedative must be employed.

The nitrites are probably of some value by lowering the blood pressure; however, this effect may be offset by dilatation of the pulmonary vessels. Blood coagulants of various sorts may be of value. Calcium is, perhaps, the best proven. Routinely, I give forty to sixty grains a day in these cases. Many biologic products other than horse serum are sold in the drug stores. I cannot be sure, from my experience, of their value.

The mechanical effect of posture, placing the patient on or toward the affected side, is of aid in diminishing respiration of that side. It also helps to prevent infiltration of blood to the opposite, and usually better, lung. This is a routine measure in our practice. However, in a few patients, this induces too great a tendency to cough. These should, as a rule, be left on their backs. The latter position is also best in those patients whose source of hemorrhage cannot be determined.

These methods of treatment are effective in the majority of cases of small hemorrhage. However, a large share of the literature on the subject is well summed up in an article in the *New York Medical Journal* (Schwatt, N. Y. Med. J., 114:631-4, Dec., 1921) as follows: "There is no drug or treatment except artificial pneumothorax that can be said to stop hemorrhage."

In artificial pneumothorax we have a mechanical method of stopping hemorrhage which, from the standpoint of pressure, is, in many cases, as effective as packing a surgical wound. Before discussing artificial pneumothorax, I would mention one other method. In the case of Eloesser of San Francisco, which later came under my observation, artificial pneumothorax was unsuccessful because of adhesions, but the patient was saved and later became arrested through thoracoplasty. However, because of the nature of the emergency pre-

sented by hemorrhage, and the relative ease and rapidity with which pneumothorax may be administered, together with the entire absence, usually, of shock, artificial pneumothorax is always the initial method of choice.

Treatment of pulmonary hemorrhage through artificial pneumothorax is by no means new. Carson of Liverpool is credited with presenting the idea in 1822. At that time he noted that soldiers who suffered traumatic pneumothorax were cured of pre-existing tuberculosis. He suggested that pulmonary hemorrhage would be controlled by collapse of the lung as readily as is hemorrhage following parturition by collapse of the uterus. He evidently did not carry out his suggestion. In 1882 Forlanini published the theory of pneumothorax. In the *Transactions of the Clinical Society of London* in 1885, appears a report of an attempt by Cayley to control hemorrhage by means of open incision into the pleura and insertion of a silver tube. The hemorrhage appears to have been controlled partially, but the patient died a few days later, miliary tuberculosis being found at autopsy. In the treatment of tuberculosis, John B. Murphy used artificial pneumothorax first in this country in 1898, and it has since been very generally adopted. Its use was initiated in Arizona by Dr. W. W. Watkins some fourteen years ago in the treatment of certain of our citizens who are now well and happy. The use of artificial pneumothorax in control of hemorrhage has become more and more common, so that today there are very few sanatoria in this country which cannot point to its value in certain cases.

In hemorrhage of the large-vessel type, the advisability of employing artificial pneumothorax should always be considered. In cases with practically unilateral tuberculosis, there need be no hesitation in using it. These cases get good immediate and ultimate results, for the collapse is ordinarily maintained as a form of treatment.

The bi-lateral cases require careful study, and it is often very difficult to decide from which side the bleeding comes. In general, it more often comes from the more involved side. However, it is necessary to judge by the physical signs. The bleeding side typically is less mobile; there is frequently a diminution of breath sounds and voice sounds; but in cases with marked cavitation, the usual amphoric breath sounds, exaggerated voice sounds and large moist or gurgling rales may often be heard both on expiration and inspiration. Occasionally,

the signs of the two sides of the chest are very similar. In these cases, the bed-side x-ray film may make the decision as to the source of bleeding. However, it is of less value than the physical signs.

Before proceeding with collapse of the bleeding lung in bilateral cases, the condition of the other lung must be carefully weighed. However, I believe the tendency is toward too great conservatism in this regard. I very much regret my delay of pneumothorax treatment in two cases of the bilateral sort which had made great progress toward arrest of their disease in the better lung only to suffer fatal hemorrhages from the more involved lung.

Small hemorrhages, often repeated, are a double danger to the patient. In the first place, we cannot be sure when they will become large hemorrhages. Second, if the lung is extensively or repeatedly infiltrated with blood, diffuse spreading of the tuberculous process may occur. Therefore, in these small-bleeder cases, pneumothorax should be used promptly when it is desirable to continue it as a matter of treatment. It should be used oftentimes, also, in those border-line cases where the involvement in the better lung is definite but relatively quiescent.

The technic is the same that you have seen demonstrated by Dr. Fred G. Holmes at the Clinic in Phoenix two or three years ago. His compact arrangement of individual anesthetic bottles and sterile packets of needles and tubing connections for the pneumothorax instrument, makes an easily portable unit that can be used by one man any time and anywhere. It is especially admirable in the large-hemorrhage cases where quickness may be of greatest importance.

CONCLUSIONS

1. Pulmonary hemorrhage is most commonly caused by tuberculosis.

2. For practical purposes, it may be divided into two types: those arising from large and those from small vessels.

3. It is impossible to foretell when small hemorrhages may become large.

4. Methods of treatment are physical, physiologic, medical, mechanical.

5. Of all forms of treatment artificial pneumothorax is the most effective. It is applicable in unilateral cases and in selected cases with bilateral involvement. Its advisability should be considered in every case.

SUDDEN DEATH FROM ACUTE LARYNGEAL OBSTRUCTION OF NON-DIPHTHERITIC ORIGIN

Report of Cases Occurring During a Winter Epidemic and Autopsy Findings.

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Read by title before the Twelfth Annual Meeting of the Medical and Surgical Association of the Southwest, held at Tucson, Ariz., Nov. 11 to 13, 1926.

While acute infections of the larynx with spastic and obstructive manifestations, are common and relatively benign, a recent epidemic was accompanied by an occasional sudden death from what appeared to be acute laryngeal obstruction. The cases to be reported all occurred during the cold season of 1925-1926 when a so-called epidemic of influenza was prevalent.

Almost at the onset of the epidemic, the unusually severe laryngeal and tracheal symptoms were noted. Hoarseness, spasmodic croup, asthmatic bronchitis and substernal pain were by far the most troublesome symptoms. In consideration of the few serious complications the epidemic was, in the main, rather mild.

The character and the clinical course of the disease may be best illustrated by the legend of the following cases.

CASE NO. 1. W. V., aged 4, was a male white child of about average size. Previous history was negative except for a tendency to recurring attacks of asthmatic bronchitis. He was seen late in the morning of Dec. 20, 1925, with a typical attack of asthmatic bronchitis. Some slight pharyngeal injection was also noted along with considerable substernal pain. There was a normal temperature. A harsh racking cough was rather annoying to the patient. About four hours later I was called and told that the child was in imminent danger of suffocation. He appeared cyanotic, the pulse was extremely rapid and the slow, labored breathing required the greatest of efforts. He could not lie down and the dyspnea was both expiratory and inspiratory. A large dose of syrup of ipecac and belladonna was given. No membrane was present. The child was immediately seen by Dr. Rawlings and shortly after by Drs. Schuster and Schuster. On the way to the hospital, the child vomited with some relaxation of the respiratory efforts. Rearing the possibility of a diphtheritic infection, 10,000 units of antitoxin were given intravenously and 20,000 units more intramuscularly. The laryngeal image revealed an acutely swollen epiglottis and some distortion of the adjacent structures. The cords were not visible through the ring of greatly swollen tissues. The child was so prostrated that no efforts were necessary to restrain him. Tracheotomy was thought of imminent necessity. Gradually the child began to relax, breathing became somewhat easier and, under a croup tent, the breathing returned to a normal effort in about forty-eight hours. Cyanosis persisted intermittently. The illness lasted three or four days along with a persistent harsh cough. Dry, sonorous and sibilant rales were present continuously, and more

or less transient dyspnea was noted from time to time. Bacteriological examination of the throat showed almost pure cultures of pneumococci and no diphtheria bacilli. The first case made a complete recovery.

CASE NO. 2. H. N., aged 1½ years, was a Jewish male. Previous history was negative until about 8 months of age when the child developed a very severe throat infection of staphylococcal origin, which terminated in a unilateral deep cervical abscess. His health was excellent until the onset of his fatal illness. Late on the evening of Jan. 14, 1926, his mother noted a cold and slight fever that she considered of so little importance that she consulted her physician, Dr. J. A. Rawlings, by phone only. The following morning the child was seen by Dr. Rawlings who reported a temperature of 102, respiration 62, some slight pharyngeal redness, slight cough and a few dry rales in the chest. At 11 a. m. the mother reported some difficulty in breathing. In response to an urgent call about 2:15 p. m., the child was again seen, and for the first time appeared critically ill. Cyanosis was marked and a pronounced inspiratory dyspnea was associated with a semiconscious state. Together with Dr. Rawlings, we agreed that probably diphtheria should be considered as a basis of a possible laryngeal obstruction. Exertion, needed to restrain the child, resulted in a dangerous collapse. A desensitizing dose of antitoxin was first given. A few minutes later, just as the serum was about to be injected, the child died, apparently from the little exertion made while restraining him. Intracardiac adrenalin was given at once and a tracheal tube was inserted by Dr. Schuster. Artificial respiratory efforts failed to elicit the slightest response.

Autopsy findings were of special interest from two angles: namely, a local laryngeal and the constitutional pathology. Both lungs were practically normal except that the left was slightly collapsed. The heart seemed somewhat larger than might be expected but contained no gross lesions. The trachea was somewhat reddened and greatly swollen. The epiglottis and the tissues below it on the posterior side of the larynx were so swollen that the opening in the epiglottis was completely closed. On section, the vocal cords were so swollen as practically to lose their identity. Much of the swollen flabby tissue above the cords also seriously encroached on the lumen of the larynx. The question arose whether the tissue above the cords closed before the epiglottis.

Of similar interest was the physique of the child. The skin was fine and his body was exceptionally well developed, which is found so often in the status lymphaticus cases. The thymus covered the whole upper anterior part of the thoracic viscera and extended well down on the heart. The measurements were 12 by 7.5 by 1.5 cm., and weight was 37 grams, which greatly exceeds the normal. The lymphoid tissue at the base of the tongue was well developed as well as the glands in the abdomen. The pathological diagnosis grossly was: Obstructed larynx, hypertrophy of the thymus and hypertrophy of the abdominal glands.

CASE NO. 3. V. R., aged 5 years, white female. Previous history was of little importance prior to the last illness. She was first seen by me on the night of Jan. 21, 1926, about 10:30. The mother stated that the child had been somewhat ill with the "flu" for 2½ days. While there had been little fever, the child had complained bitterly of a pain under the sternum and a harsh cough which had become croupy at night. During the preceding three days she had played as usual but began complaining as the nights came on. On the last day,

Dr. Geer had seen the child at 5 p. m., and reported the child up and about with no temperature, negative chest findings and a slightly reddened throat. When seen by me at 10:30, the child was taken to the City-County Hospital and antitoxin cyanotic and acutely ill. Some coarse rales could be heard over the chest. A temperature of 102, respiration 28 and a pulse of 150 were found. Imminent danger of suffocation was apparent. A hypodermic of 1/24 gr. of morphine sulphate and 1/300 gr. of atropine sulphate was given and very shortly some relief was experienced. The child was taken to the City-County Hospital and antitoxin given although the true nature of the condition was suspected. A croup tent was started and a repetition of the hypodermic ordered if needed for the relief of the dyspnea. About four hours after the initial hypodermic, a return of the symptoms necessitated more morphine. An attack of dyspnea suddenly developed and, during the struggle for breath, the child fell off the bed and died immediately.

Autopsy findings: the opened thorax showed a thymus slightly larger than normal, which weighed 18 grams and measured 8 by 4.5 by 1 cm. The heart showed some signs of beginning coronary sclerosis on the right side. The lungs were air-containing and had no solid areas but some excess of moisture about the hiluses and enlargement of the glands adjacent. The larynx was small and some swelling was present. Considerable injection was present all the way down the trachea. The most obstruction was low down in the trachea and primary bronchi. The futility of tracheotomy in this type of case is apparent.

CASE NO. 4. Courtesy of Dr. E. J. Cummins

In Dr. Cummins' communication he states: "The baby would have been 2 years old on April 27, 1926. I was called on Sunday morning, March 27, 1926, and was told that the baby was dying. Upon arrival at the house, I found the baby unconscious and respiration very labored. The child appeared to be suffering with some obstruction in the larynx. The mother stated that the child had been sick about two days with what she considered to be a cold or croup. Examination revealed no membrane in the throat although the tonsils were enlarged and reddened. 20,000 units of antitoxin were administered intramuscularly. The child was then brought to the office and a tracheotomy was done by Dr. Vandevere. Respiration was better after the tracheotomy. The same evening, 10,000 units of antitoxin were again given. The child was resting better and was more rational. Its temperature ranged from 101 to 103 and the pulse was very rapid.

"Monday, the child got along very well. Tuesday, about 3 a. m., the child's breathing became very labored and Dr. Vandevere brought it to the office and tried to remove some membrane with the suction apparatus. All day Tuesday and Tuesday night, the child had slight spasms and had great difficulty in getting air. He was practically comatose all the time. Wednesday, the child seemed to be somewhat better. However, 20,000 units more of antitoxin were given intravenously. Wednesday night the child seemed to take a turn for the worse. The bronchoscope was used in an attempt to remove the membrane from the trachea. Thursday morning the child again seemed to be somewhat better but towards noon he commenced to fail. Breathing was very labored; the pulse became weak and the child finally died at 8 p. m. Smears and cultures from the throat and from the trachea were taken and failed to reveal diphtheria bacilli but showed streptococci."

Autopsy report: The body is that of a well

nourished white child. There were no external marks of violence found. There was a recent wound in the trachea where a tube had been inserted.

Organs of the chest only were examined. There was no excess of fluid and no adhesions. There was consolidation in the posterior portion of both lower lobes, most marked in the right, and the lungs were quite wet. There was a recent organized thrombus in the right heart and to a lesser extent in the left side. Otherwise, there were no changes in the heart.

The epiglottis was small and was not swollen. The larynx was small and the tissue about the vocal cords was greatly swollen and the opening was very small. On opening the trachea, there were several plugs of brownish mucus or exudate but no definite membrane. Stained smears from this material showed a large number of streptococci and some pneumococci but there were no diphtheria bacilli present. Diagnosis: Streptococcic laryngitis and tracheitis, lobar pneumonia and cardiac thrombosis.

This case eventually became a panrespiratory infection. The death probably followed the grave sequelae in the heart and lungs. Doubtlessly the child would have succumbed to either the tracheal, lung or cardiac pathology.

ETIOLOGY

The causative agents in the cases cited are, doubtless, bacterial in origin. The nature of the epidemic probably has a bearing on the predominating type of organisms and the symbiotic occurrence of bacteria. Streptococci, pneumococci and staphylococci have been found by us in several throats where this particular type of symptomatology has occurred. The cases with pneumococci seem to be the most severe. Several autopsies made on pneumonia cases at this season showed lungs which were extremely moist and grossly fulfilled the requirements of typical influenza. For this reason, I believe we may assume that a real influenza was present in most of the cases studied.

Secondary factors as neglect, careless exposure to cold air or placing the children in cold rooms when suffering from extremely severe upper respiratory infections, doubtless exaggerate the symptoms. Vocal abuse, too hot inhalations or over-zealous treatment of the pharynx and larynx could conceivably aggravate an acute attack of laryngitis. All the children with these symptoms were in excellent physical condition.

A constitution of the exudative type, large tonsils both pharyngeal and lingual where the pharyngeal fossa is small, and chronic upper respiratory infections doubtless predispose to serious laryngeal inflammations.

PATHOLOGY

Grossly, the lesions presented were those of a severe laryngeal inflammation involving the superficial layers of the mucous

membrane as well as the submucous tissue. In case No. 2, a perichondritis was present. Edema of the soft tissues about the larynx added considerable distortion to the soft parts. The process usually extended into the trachea and even into the primary bronchi, as in Case No. 3. Considerable white material was usually found in the trachea that may have been confused with a membrane, but this was composed of desquamated cells, mucus and serum. On section, round cells, leukocytes, fibrin and serum were found throughout the acutely swollen tissues. No doubt, had the child lived long enough in at least one of the cases (No. 2) he would have developed an abscess about the larynx. The process was too young to show ulceration. Case No. 3 showed the least infection about the larynx but a maximum in the bronchi and their first subdivisions. Symptoms in this case must have been largely reflex.

SYMPTOMS

The onset usually follows a respiratory infection which at first may seem insignificant. Some redness of the throat is found. The patient suddenly becomes acutely ill. Breathing is labored, the expression anxious, the color cyanotic and the pulse rapid. The violent breathing efforts may be accompanied by a loud snap at the end of a diaphragmatic excursion. Substernal pain is severe and the harsh croupy cough is exhausting. Suffocation seems imminent. Oral examination reveals little. The throat is red and the laryngeal image may show some edema about the laryngeal orifice. Usually the oral examination is associated with great distress. The chest may contain a few dry rales.

The principal diagnostic difficulty is to differentiate this condition from bronchial asthma, laryngeal diphtheria and acute edema of the larynx. It is well to bear in mind the characteristics of any current epidemic. All the conditions may have both expiratory and inspiratory dyspnea. All are cyanotic and may be toxic late. All may require the same emergency care. Belladonna, ipecac, morrhine and adrenalin may favorably affect all the conditions except diphtheria, which continues to grow worse.

The differential diagnosis is very unsatisfactory. Repeated attacks of asthma may be of considerable value in differential diagnosis. A primary attack in very young children is frequently so violent that an accurate diagnosis is never established until subsequent asthmatic seizures have been witnessed. Many of these fail to respond

to usual antispasmodic remedies. Acute edema of the larynx often assumes the violent course of the disease described. Adrenalin usually gives immediate relief. The presence of wheals or a known idiosyncrasy, often can furnish valuable information of positive diagnostic value. In laryngeal diphtheria, a diagnosis is often never made, owing to the difficulty of securing a good culture. The absence of a membrane does not exclude diphtheria and should not be given too much weight in an emergency. The croup which grows worse during the day causes suspicion of diphtheria. A careful nasal and pharyngeal examination of immediate members of the family often helps in substantiating a suspicion of diphtheria. In all obstructions to the larynx, the laryngeal diphtheria should always receive first consideration.

The urgent nature of these four conditions which have so much in common, presents diagnostic emergencies without parallel in all pediatrics. A spasmodic croup may simulate one of these cases or may actually usher in the attack. A true spasmodic croup is usually associated with a more extensive pharyngeal redness, little or no true laryngeal swelling or distortion. The throat is dry, as a rule, and the attacks develop as the temperature of the night falls. These cases usually respond quickly to steaming, ipecac and warm drinks. There is usually a history of many such attacks. Abscess of the larynx and other acute conditions are usually accompanied by diseases that make the diagnosis more apparent. Foreign bodies could at times be confused with laryngeal inflammations, particularly where such substances as beans, peanuts and similar objects may have lodged just below the cords. Owing to the difficulty in securing a good laryngeal examination in many children, a procedure purely symptomatic in type must be started to relieve the patient.

A study of these cases should guard against a too favorable prognosis in our upper respiratory infections and particularly those involving the larynx. Doubtless many cases treated for laryngeal diphtheria, with fatal sequela, had lesions of the sort just described. Personally, I feel that I have frequently made this error. As a matter of precaution it is well to regard all cases with tracheitis, laryngitis and laryngeal spasms as dangerous until proven otherwise. This should also guard against considering our provisional diagnosis as infallible.

TREATMENT

Prophylactic treatment, per se, is a doubt-

ful thing. Anything which may improve the child's general condition should be tried. Children susceptible to colds and bronchitis should be protected from needless exposure to infections of the respiratory tract. Asthmatic children seem to be especially prone to attacks of this sort. In general, the exudative diatheses should be carefully watched once an infection of the throat has developed. Needless exposure to cold winds, uncomfortable sleeping quarters, dust and irritating smelter fumes, may directly influence the course of the laryngeal inflammations. In general, the children of types most susceptible to respiratory disorders should have everything done to build up resistance. This may include the removal of obstructive tissues of the nose and throat, sun baths, cod liver oil or even the limited use of mixed vaccines in selected cases. The general use of toxin-antitoxin in young children will be of great value in eliminating diphtheria and the diphtheritic croup. As a prophylactic against one disease, it incidentally aids us in promptly attacking the inflammatory obstruction.

Medical treatment is varied and purely symptomatic. Antispasmodics, narcotics, adrenalin, emetics and inhalations all seem to have value at times.

Diphtheria antitoxin is usually advisable because an absolute diagnosis can rarely be made. Doubtless, the foreign protein has some beneficial action in the non-diphtheritic cases. If one is certain of the diagnosis, omit the antitoxin.

Intubation, from the findings of the autopsied cases, would cause laryngeal necrosis. Tracheotomy is purely a life-saving measure and should be considered as such. Tracheotomy is undoubtedly the only operative procedure of value. Scarification of the swollen tissues in the presence of a virulent infection is essentially unsurgical.

The consultation of the expert laryngologist is to be sought early in all doubtful cases.

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THORACOPLASTY FOR THE RELIEF OF TUBERCULOSIS

A Review of the Records of Twelve Cases at St. Joseph's Hospital.

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Read in a Symposium on Chest Surgery, at the monthly staff meeting of St. Joseph's Hospital, Phoenix, Ariz., March 14, 1926.

During the two years following November 1, 1924, twelve patients were operated

on at St. Joseph's for the relief of tuberculosis by the surgical collapse of the worse lung. The end results are known or can now be predicted. While no general conclusions can be drawn from the analysis of so few cases, it is worth while to examine the records as a group, in order that the staff may share in the knowledge and experience of this difficult operation, which was gained by those members who had immediate contact with the cases studied.

Considering first the clinical material subjected to operation, we find that it was uniformly poor. Eleven of the twelve patients had far advanced disease, and are to be classified as 3 C; the other, classed 3 B, had been exsanguinated by many hemorrhages, and his coagulation time could not be kept below 12 minutes. As to nutrition, half were well under weight; four more were fairly well nourished, and the records omit this information in two cases. The general condition was not good in any case. The lung on the operated side was, in all cases, badly damaged, and in at least four cases it was destroyed. One patient had a pyopneumothorax outside a badly damaged lung, one had an infected spontaneous pneumothorax (partial) and two others had partial pneumothorax which had failed to collapse their cavities. The condition of the opposite lung was not recorded in one case. In all the rest there was evidence of more or less tuberculosis in the better lung: in six instances this was healed, while five others had more or less activity. Cavity in the better lung is recorded three times, pneumoconiosis once.

In age, these patients ranged from 22 to 54. Seven were in their thirties, four in their twenties. All had long histories of invalidism from tuberculosis.

The indication for operation is apparent in this outline of the personnel. Specifically, hemorrhage which could not be checked by other means was the deciding factor in two cases, and pyopneumothorax in another. The rest were subjected to operation in the attempt to halt extensive disease which was progressive in spite of prolonged conservative treatment.

Some of the records are not clear as to the nature and extent of such earlier treatment. Probably every patient had the benefit of careful roentgenologic study, but no reference to such study is found in two cases. In eight instances an attempt at artificial pneumothorax had been made; in one case it was not tried; in three, no reference is made to such an attempt.

Ethylene was the anesthetic of choice, having been used in nine cases. One patient was operated under nitrous oxide-oxygen preceded by nerve blocking, and two operations were performed under local anesthesia.

In eight cases the two-stage operation was done, the upper five ribs being usually the first resected; the sixth to the eleventh (inclusive) were let down from one to two weeks later. In the four one-stage operations, the number of ribs resected varied from three to ten.

The mortality was high. Of the patients operated in one stage, two died next day. One of these was septic and in bad condition before operation, which was undertaken only at her urgent request. The other, who had ten ribs resected, went into shock at the end of the operation; mediastinal flutter seems to have occurred in this case. A third, who died on the fifth day after the resection of three lower ribs for the closure of a low-placed cavity, seems to have suffered from blocked drainage and sepsis. The fourth patient to be operated at one stage was the exsanguinated hemorrhage case. He was given the antero-lateral operation, with removal of large sections of the third to seventh ribs inclusive on the right side, with the definite object of collapsing a cavity near the hilum. Everything considered, he was probably in better condition than any other patient in this series. Certainly he made the best recovery, and after two and one-half years he is in robust health.

Of the eight who were operated in two sittings, two died shortly after the second operation. One tolerated the resection of the upper ribs well enough, but the second incision ran into an area of infected chest wall with two necrotic ribs. He died twelve days later, of sepsis. The other, an elderly man in poor general condition, developed bronchial fistula through the lower wound. A third who was done in two stages died some three months after leaving the hospital. He had practically complete destruction of the right lung, with beginning involvement of the left. The indication in his case was hemorrhage. After the operation he had great difficulty in clearing the shell of his partially collapsed right lung, and, before his death from sepsis, the involvement of the opposite side had progressed considerably.

The results in the remaining five cases are more encouraging. One works full time; one is ready to work; two more are

ambulant, much better than before operation, and steadily gaining. One other became abundant, but, because of complications incident to her long illness, her condition is less favorable than that of the other living patients.

In reviewing so small a series of cases, only brief comment and tentative conclusions are permissible. With this reservation in mind, we note that ethylene or gas-oxygen anesthesia seems to be preferable to local anesthesia, and that for most patients the two-stage operation is the better. It is obvious that the chances of the patient are influenced largely by his general condition, as well as by the functional capacity of the better lung.

If we are to profit by a study of the case records, it will be necessary for those in charge of thoracoplasty cases to set down somewhat more fully the essential items of the x-ray findings and of the antecedent treatment, and especially whether artificial pneumothorax has been tried. It is my conviction that this simpler procedure should be given a cautious trial in every case before deciding to cut the ribs, even though the lung detail may be entirely obscured to the x-ray by pleural thickening, and in spite of any history of pleurisy, wet or dry. This is a fair criticism, for I myself was responsible for the omission of such an attempt in one case of this series.

Finally, it is evident even from these few cases that the operation has a definite field of usefulness, and that it can be done very well by our Phoenix surgeons. If we submit to them only patients in the last stages of consumption, we are not privileged to complain of their high mortality rate. Phoenix is, in a sense, a court of appeal to many consumptives who have been defeated in their attempts to recover elsewhere. A certain and, indeed, a considerable number of such patients can be relieved by surgical collapse and by no other means. We owe it to them and to ourselves to offer them surgical help while they are still able to be benefited by it.

Adequate post-operative care is second in importance only to the operation itself. Thoracoplasty, in itself, removes no diseased tissue, repairs no damage. It only puts the lung at relative rest, partially collapsed and in a favorable position to heal. Conservative treatment after operation under the most favorable conditions is required for a considerable length of time, longer, in fact, than after a successful collapse by artificial pneumothorax. Postural rest is useful in increasing the degree of

rib subsidence and the results are apparently better if only a moderate portion of each rib has been resected. The hinge action which ensues sufficiently decreases the volume of that side of the chest, while it still leaves a rigid chest wall. When a large portion of half, or more, of the ribs has been removed, there is immediate difficulty from the flaccidity of the wall, which not only exposes the patient to the dangers of mediastinal flutter and of bad drainage because he cannot clear the chest by coughing, but it permanently impairs his breathing capacity by sinking in with each inspiration.

DISCUSSION

Dr. Willard Smith:—The term "thoracoplasty" includes all plastic operations on the thorax. The phase of thoracoplasty with which we are now concerned is its adaptation to the treatment of pulmonary tuberculosis. This treatment has not yet been applied to a sufficient number of cases to enable it to become definitely standardized, though certain principles are being learned by experience.

It is our present belief that thoracoplasty may properly be applied in the treatment of tuberculosis only when other methods have, by trial, demonstrated their inability to bring about arrest, and then only in a limited and carefully selected class of cases. These are far advanced cases, usually with cavitation, and essentially unilateral in the sense of having so little activity in the other lung as to make probable the recession of that activity when the hopeless lung has been rendered incapable of flooding the patient with toxin. It is seldom to be used where artificial pneumothorax is possible. Exceptions to this rule occur when, because of pleural adhesions, cavity hemorrhage cannot otherwise be stopped, or when dense bands of adhesions or persistent pleural effusion renders the continuation of a pleural space inadvisable.

While thoracoplasty is, at present, a last resort procedure, the greatest mistake in its application so far has been in extending it to cases so toxic and so depleted in vitality as to render the operative procedure unduly hazardous because of shock and exhaustion. Roughly speaking, it has resulted, in its application to otherwise hopeless cases in the hands of many surgeons, in establishing a recovery rate of about 35 per cent. Another 35 per cent have had more or less slowing up in the pathological processes, while about 30 per cent have died from the operation or conditions which can justly be claimed as surgical deaths. The salvage of 35 per cent in a class of cases which are otherwise without hope, is what makes the operation worth while.

It is not an attractive field for the surgeon because such patients present a terrifically high risk and are productive of extremely low income to the surgeon. They have usually spent about all their money chasing the cure. Those who still have money, most commonly can be cared for comfortably by doctors and nurses who are willing to divide that money with them. The doctor who has much to do with tuberculous patients becomes imbued with a sort of everlasting hope that his patient will be one of those who eventually reach an arrest and the habit of waiting and hoping lulls him into a continuation of the measures of lesser risk. The patient, poisoned by tubercle toxin, easily lends himself to that plan because of the

specific psychological characteristic of the action of tubercle toxin, viz.: eternal hopefulness without reasonable cause. The changes which occur in tuberculosis are gradual, and, hence, decision to do a radical thing is easily postponed until, when both the patient and doctor awaken, it is sometimes too late to give the patient a reasonable chance, even by thoracoplasty. As more salvaged patients become observable, doctors will probably give this method more consideration.

Thoracoplasty does not cure tuberculosis. It merely converts an impossible into a possible situation. With one lung practically completely destroyed, the patient is chained to a corpse and must inevitably succumb. If that lung can be put at complete rest and become mummified, what is left of the patient has a fighting chance—sometimes.

We need an improvement in the selection of our cases, in two ways. The first is to be able to exercise sufficient foresight to apply this method in cases which will reasonably be benefited by it, before they have slid too far down the scale; and second, we need the courage to say no when asked to operate upon those cases which would have been benefited some months previously but have now become hopelessly saturated with the products of tuberculosis. This presupposes an amount of insight and reason which is, as yet, just a little beyond human possibility. As the matter now stands, we have to use the best judgment we can, try to exercise common sense, and await the lessons learned by experience.

ANESTHESIA IN CHEST SURGERY

S. I. BLOOMHARDT, M. D.
Phoenix, Arizona

Read in a Symposium on Chest Surgery at the Monthly Staff Meeting of St. Joseph's Hospital, Phoenix, Ariz., March 14, 1927.

Patients who have thoracic surgery almost invariably become shocked and suffer from lowered blood pressure; chloroform, therefore, should not be considered. Other things being equal, the agent selected should sustain the blood pressure at the highest possible level consistent with good surgical anesthesia during the operation and with a minimum of reaction after operation. Marshall has found that, while the blood pressure was sustained equally as well under ether vapor as with gas, there developed a few hours later a lowered blood pressure that did not obtain when gas was administered. Cannon states that it was found that ether caused, in a shocked animal, a fall of blood pressure which might be as great as 30 or 40 mm. of mercury, even though only a sufficient degree of anesthesia was induced to barely abolish simple reflexes. He holds that, if the same degree of anesthesia be maintained with nitrous oxide and oxygen, the reflexes could be abolished with no fall of blood pressure whatever. Ether, therefore should not be an agent of choice in thoracic surgery. A great amount of stress is put in recent

work, and, I think, rightly, upon preliminary medication—by some it is considered of equal importance with the inhalation agent. The brain is better protected, the reflex inhibition of the heart is less likely. During the operation the pulse, respiration and blood pressure are more nearly normal. During the past war, morbidity and mortality were unquestionably reduced for thoracic patients by the following method: Each patient received morphine from 2 1/8 gr. hypodermics to 3 1/8 gr. hypodermics, and nitrous oxide and oxygen (given to unconsciousness only) under positive pressure, thus completing the analgesia and anesthesia. I think any of you who worked both with the French and Americans will bear witness to this. The French then seldom used gas anesthesia, or used it badly. The American hospitals had some good machines and some competent administrators of gas. We did much better work using the above technic.

The endotracheal and endopharyngeal methods are used successfully in lung surgery as far as the immediate operation is concerned. Each method requires an initiatory anesthesia so deep as to abolish all reflexes before the insertion of the tubes. This initiatory anesthetic favors lowered blood pressure and lowered temperature. The endotracheal method is an operation in itself, requiring additional time, and accidents occasionally occur. For these reasons these methods might be discarded for a safer and simpler one.

The positive-pressure face-mask method, the method which I am led to believe is rather universally used and selected by process of elimination, calls for the use of an air-tight face mask and apparatus capable of maintaining a pressure of approximately from 5 to 12 mm. of mercury. With this we use a constant supply of gases, provide for a constant escape of some of the gas and a slight amount of rebreathing. The escape of the gas is through an expiratory valve. No air can enter the apparatus at any time when positive pressure is maintained. In addition to being an aid in maintaining anesthesia, positive pressure in lung surgery is a very great aid to the surgeon. I believe Dr. Willy Meyer was among the first to recognize the great advantage of positive pressure and in the pioneer days he had constructed an apparatus costing thousands of dollars for the regulation of the pressure as needed. This, with our present machines, is much simpler and not expensive. Also, with positive pressure the anesthetist can give a higher percentage of

oxygen while still maintaining the same degree of anesthesia.

The technic used in thoracic surgery by Gwathmey and his staff of anesthetists is to administer morphine in $\frac{1}{8}$ gr. doses and repeat twice at 20 minute intervals if no idiosyncrasy develops. The average for each patient is $\frac{3}{8}$ of a grain. With this preliminary, he uses as large a percentage of oxygen as possible with ethylene or nitrous oxide, and in his own words, "With the patient unconscious and pink, all reflexes are abolished and he is as safe and certainly far more comfortable than with local, spinal, paravertebral, or any other method of anesthesia or analgesia." Yates adds to this, using the same method: "Positive-pressure control made examination of the lung and operation much easier and eliminated the necessity for dangerous traction. It offered a simple test of the air tightness of the closure and of satisfactory hemostasis; the necessity for undue haste was eliminated." To be sure, the danger from this method is overlapping. If the same degree of anesthesia is maintained with, as without, preliminary medication, the patient is immediately plunged into the danger zone.

For conditions in which slight positive pressure is not indicated, local, spinal or paravertebral analgesia may be used. For a time, several years back, they were using ether colonically for extensive thoracic procedures and it was considered quite safe and satisfactory. Local anesthesia with novocain by the experienced man is used successfully, and local anesthesia with the occasional whiff of gas while stripping periosteum or attacking pleura has its advantages in some cases.

This method was used by one of our staff members in a three-stage thoracoplasty this past summer—probably one of the sickest and most advanced chest cases I have seen operated. The end result was indeed very gratifying. Nerve blocking to the greatest possible extent, is the most valuable adjunct to all forms of inhalation anesthesia.

The time element is of greater importance in thoracic surgery than in most any other form of surgery. The patient's life is in jeopardy under the many hardships of chest surgery with a slow, tinkering surgeon and a good anesthetist; and conversely, in the hands of a good surgeon and an anesthetist who insists on using a poor carbureter and does not have the wisdom to step on the accelerator at the right moment.

Reviewing the cases of the last three years: From an anesthetic standpoint I doubt if in any hospital in the country could they have been handled much better. The empyemas: Going over the entire series, we find no chloroform used—only one ether and one ether with local. The remainder were either done with ethylene gas or under local or a combination of the two. The results, both post-operative and when patient left the hospital, are most gratifying. Local was the method of choice and, I think we will agree, for simple rib resection it should be so.

The thoracoplasties, from the anesthesia angle, were even better—no ether was used and ethylene used in the majority of cases. Post-operative results and end results in this series (which, I grant, is not large enough to be conclusive) show the cases done with gas in even better shape and with less mortality than those purely under local. This, however, I am convinced from the literature, seems to be consensus of opinion.

The lung abscess cases had a very high mortality. One was treated by doing a thoracoplasty to collapse the abscess wall; the remainder were done under local anesthesia.

CONCLUSION

1. Operations upon the chest invariably produce great shock; therefore, a cardiac depression such as chloroform is not to be considered in choice of an anesthetic.

2. Ether vapor may not cause lowering of blood pressure at time of operation; but so often, in the course of several hours we have a dangerous lowering.

3. If patient is already in shock, ether will cause lowering of blood pressure from 30 to 40 mm. of mercury, while our gases are not prone to do so.

4. Endo-tracheal and endo-pharyngeal methods have been practically discarded for reasons given.

5. Spinal, local, paravertebral, ether colonically, or combinations of local and gas, are satisfactory in skilled hands and in cases where positive pressure is contra-indicated. For simple rib resections in empyema, local is the anesthetic of choice.

6. Experimentally and by process of elimination by many of our better surgeons and anesthetists, the method of choice would be analgesia with unconsciousness or light anesthesia, using preliminary medication with ethylene, or nitrous oxide and oxygen, or combination of the two.

THE VALUE OF X-RAY THERAPY IN DERMATOLOGY

LESLIE M. SMITH, M. D.
El Paso, Texas

Read before the El Paso County Medical Society,
Nov. 8, 1926.

The x-ray must not be looked upon as a panacea for all skin disease. However, if properly used in those conditions in which the pathology indicates the need of x-ray effect, it is the greatest power for good at the disposal of the modern dermatologist. To call attention to its value and its limitations is the purpose of this paper.

The mode of action of the x-rays is not clearly understood. We know that large doses of the rays cause destruction of tissue; that certain structures, such as glandular and lymphoid tissue, and pathologic cells, are more susceptible than is normal tissue, and can therefore be inhibited or destroyed without much damage to the normal tissue. Small doses are often spoken of as "stimulating," but there are those who take exception to this term. In truth, it is a vague term. Small doses, however, do cause or stimulate the absorption of exudates in the skin, and hasten the return of inflammatory tissue to normal. Larger doses are inhibitory, still larger ones destructive. Just how these reactions are brought about is a matter yet to be solved. Other useful but little understood effects of the x-rays are epilation of hair when the proper dosage is used, and the antipruritic effect when applied to the skin or to the spinal roots supplying the pruritic section of skin. The x-rays are not antiseptic in the ordinary sense, as are ultraviolet rays. The apparent antiseptic action in some diseases is probably due to some tissue change which renders the soil less favorable for the organisms.

By the mathematical method of Witherbee and Remer, x-ray dosage can now be calculated with sufficient accuracy for all practical purposes of therapy, and the operator knows what to expect from a given dose.

The unit of measurement in unfiltered therapy, which is the form most often used in dermatology, is one skin unit. This is the amount necessary to cause a temporary epilation of the scalp hair. It is four-fifths of the minimum erythema dose. In filtered therapy the erythema dose is usually taken as the standard. In the simple inflammatory lesions, such as eczema, lichen planus, and seborrheic dermatitis, the doses should be small, one-fourth to one-half, skin unit, repeated at intervals of one to two weeks respectively. This is known as fractional

treatment. In the deeper and more complex pathologic conditions, such as the granulomata, subintensive treatment is usually more satisfactory. This consists of doses of a skin unit or thereabout, repeated at intervals of about a month. Malignant and premalignant lesions should have intensive treatment, without regard to slight skin damage.

It must be borne in mind that the acute x-ray burn resulting from a single large exposure is only one phase of x-ray damage to the skin. Too long continued fractional treatment, even though no visible reaction is produced, is likely to be followed in a year or two by disfiguring telangiectasia and atrophy. This effect must be avoided unless the seriousness of the disease warrants taking such a chance.

Altho it has been claimed that ultra violet light will prevent or mitigate x-ray reactions' this is not proven. In fact, the recent work of MacKee and Andrews' seems to prove the oposite.

The x-rays have been used in a great many skin diseases with results varying from brilliant success to complete failure and positive damage to the skin. A good example of the latter is the disfiguring lesion often resulting from the permanent removal of superfluous hair. This treatment is no longer used by dermatologists or roentgenologists, but is used by many so-called beauty specialists in some of the larger cities. The public should be cautioned against such treatment.

Only small doses of the rays should be administered to the scalp, excepting in those cases where it is desirable to epilate the hair. Then a carefully measured epilating dose should be administered at one sitting.

On the face, where cosmetic defects are most noticeable, benign conditions must be treated with great care to keep the dosage well below the point where the slightest erythema is produced.

In giving x-ray therapy to extreme blondes, it is well to give a test dose to a small area on the inner surface of the thigh or some other inconspicuous place, and note any hypersensitiveness to the rays. Blondes will often react with a slight erythema to a skin unit, when brunettes would not.

It is important, while a patient is taking x-ray therapy, that no irritating drugs be applied to the skin, as these increase sensitiveness to the rays and may result in a burn.

The skin diseases most commonly and successfully treated with x-rays will be briefly discussed.

Probably ninety percent of cases of acne vulgaris can be permanently cured with the x-rays. The important effect here is a gradual diminution of the sebaceous hyperactivity which is the basis of acne. The diet and general health should be looked into, as defects of these often aggravate acne. Fractional therapy is used.

The lesions of eczema, neurodermite, and the occupational dermatoses usually respond well to a few small doses of x-rays. This, however, does not lessen the necessity for searching for the cause and eliminating it if possible.

Seborrheic dermatitis clears up quickly as a rule under fractional treatment. Faulty diet and digestive disturbances are often partly responsible for its presence, and should be corrected.

Rosacea, though a very stubborn condition, is benefited by fractional x-ray therapy, in connection with strict diet and correction of digestive disorders.

Limited areas of lichen planus are most easily cured by the x-rays on the lesions. More extensive cases are sometimes benefited by fractional filtered therapy to the proper spinal roots.

In herpes zoster involving the spinal nerves the pain is relieved within a few hours by a similar treatment to that just mentioned for lichen planus. The vesicles as a rule are fairly well dried by the third day. One treatment only is required.

Recurring herpes simplex is often cured by fractional therapy. The chronic exfoliation of the lips, cheilitis exfoliativa, which is so troublesome, also responds to this therapy.

Psoriasis, in my experience, responds more quickly to x-ray than to any other agent. Unfortunately, however, this form of treatment cannot be administered to extensive body surfaces without fear of harmful systemic effects.

Pruritis ani and vulvi can usually be relieved by fractional x-ray therapy, but the rectum and pelvic organs should be searched for pathology, for there will be found the most frequent causes of this annoying symptom. If a cause is found, the pruritus may be relieved without the x-ray.

The unpleasant hyperidrosis of the feet and axillae can be controlled by fractional treatment.

Keloids and hypertrophic scars can be made less noticeable by semi-intensive therapy. Keloids which are small and suitable for excision are best irradiated before and after operation. Otherwise they are likely to recur in a worse form.

Intensive filtered therapy, given early, will often abort a carbuncle and prevent much trouble.

The tuberculous lesions of the skin, such as lupus vulgaris, tuberculosis verrucosa cutis, and erythema induratum, are greatly benefited by subintensive x-ray therapy. In a majority of my cases of lupus vulgaris and tuberculosis verrucosa, however, I have been forced to resort finally to electrodesiccation or coagulation before effecting a complete cure of the lesions.

The granulomata caused by fungi, blastomycosis, actinomycosis, and mycetoma, are benefitted by x-ray therapy in connection with the administration of iodides. In mycetoma the results are not what would be desired. Most cases of mycetoma eventually come to operation.

The x-ray is also a valuable adjunct in the treatment of the more superficial fungus infections, though it is seldom necessary except in infections of the scalp and beard, where it may be necessary to epilate. In scalp infections with the microsporon or with favus, one will save time by completely epilating the scalp, temporarily of course. However, in examining a considerable number of cases of ringworm of the scalp in El Paso, mostly among Mexicans, I have yet to find a case of infection with the microsporon Audouini. These cases were all caused by large-spored fungi. This organism is less resistant than the microsporon, and these cases can often be cured by foreign protein therapy, as Engman³ has shown, or by persistent local antiseptic treatment.

Ringworm infections of the nail and chronic paronychia are benefited by x-ray therapy, but the results have not been satisfactory.

Plantar wart, a very painful condition of the foot, responds to intensive therapy.

The x-ray has been a boon in the treatment of malignant diseases. In epithelioma, and Paget's disease, a choice between surgery, diathermy, x-ray, and radium must be made, depending upon the size, stage, and location of the growth. A combination of several of these agents is sometimes desirable. The infiltrations of leukemia and mycosis fungoides are best controlled by subintensive x-ray therapy, but at each subsequent exacerbation of the disease it becomes more resistant to the rays, so that finally this or any other form of therapy is hopeless.

A discussion of all the diseases in which x-ray has been used would be an almost endless task, but in these few diseases I be-

lieve I have covered the field of greatest usefulness of x-ray therapy in dermatology.

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THE BRONCHOSCOPE AND ITS USES

W. E. VANDEVERE, M. D.

El Paso, Texas.

Read before the El Paso County Medical Society.

In 1897 Killian devised tubes with which the bronchi were examined, light being reflected through them by an electric head mirror. In 1905 Chevalier Jackson devised similar instruments in which illumination was obtained by a small electric light being placed near the end of the tube. Jackson also developed a most valuable instrument in his direct laryngoscope, which is especially useful in the diagnosis of laryngeal conditions and for the passage of the bronchoscope.

Acute inflammatory infections in the throats of young children, causing an interference with breathing, is common. It may be a simple spasmodic croup, or it may be a case of laryngeal diphtheria, in which there is no membrane to be seen in the pharynx. In these cases, an examination of the larynx with Jackson's laryngoscope is easily done,—without an anesthetic and the diagnosis made with more certainty. On the other hand, I feel after some experience with the Lynch suspension laryngoscope that that is the most satisfactory instrument yet devised for operative procedure in the larynx.

The esophagoscope, which is really a modified bronchoscope, is used for diagnosis, treatment, and for the removal of foreign bodies in the esophagus. It is sometimes difficult to determine whether an esophageal stricture is organic or functional. The passage of the esophagoscope gives a direct view and allows us to explore a diverticulum or note the character of a stricture, if present. Such studies should be combined with the use of the radiograph and fluoroscope. There are times when organic strictures are difficult or impossible to treat without the aid of direct vision through the esophagoscope. This instrument is also of much help to the surgeon when operating on esophageal diverticula because bougies, passed into the diverticula through the scope, facilitate the operation by enabling the surgeon to map out the process more clearly.

In considering foreign bodies in the

esophagus, we should bear in mind that this is a musculomembranous, elastic and thin-walled canal nine or ten inches in length, commencing opposite the sixth cervical vertebra and terminating at the stomach opposite the eleventh thoracic vertebra. The diameter varies from one-half to one inch or more in the adult, with three definite constrictions; at the entrance, where crossed by the left bronchus, and at the passage through the diaphragm. It is at these points where acid or lye burns are most severe or where foreign bodies are most likely to lodge.

Foreign bodies in the esophagus include everything from fish bones to false teeth. Quite often a patient is positive that a foreign body has lodged in the esophagus when the tissues have merely been scratched by the passage. However, if pain remains, and especially if an increased flow of saliva continues, we most likely have a foreign body to deal with. X-ray will quickly settle the question in case of opaque bodies. Removal of foreign bodies from the esophagus is attended with more danger than removal from the bronchi because of the ease with which the esophagus is perforated.

Until recent years, the bronchoscope was used entirely for the removal of foreign bodies, but now is being used in the treatment of lung abscesses and other non-specific infections. The removal of the pus by suction, allowing ventilation and drainage, is the method by which benefit is obtained.

In considering manipulations in the air passages, we should remember that in the adult the trachea is about four and a half inches long and extends from the sixth cervical vertebra to the fifth thoracic, where it divides into the right and left bronchi. The right bronchus is about one inch in length and more vertical in direction than the left, forming an angle to the median plane of about twenty-five degrees, while the left bronchus is about two inches long, smaller than the right, and forms an angle to the median plane forty-five degrees. It is this difference in the two bronchi that explains the relative frequency of foreign bodies in the right bronchus.

Foreign bodies in the air passages are most common in infants and children. With a foreign body in the mouth, the child suddenly cries or laughs, drawing the substance into the trachea. At first there is violent coughing, which gradually subsides to recur from time to time. The symptoms may simulate influenza or pneumonia in recent cases and asthma or tuberculosis in the old cases. The opaque bodies are easily seen

on the radiograph or fluoroscopic screen and no obscure chest condition should be denied the use of the x-ray. Physical signs in these cases depend on the size and shape of the foreign body, where located, and how long present. Organic bodies are not very well borne in the bronchi while inorganic bodies may remain for years with little disturbance.

In the removal of foreign bodies from the lungs or esophagus, I prefer ether anesthesia without the use of a preliminary hypodermic or morphine or similar drug. With a side mouth gag in place and head well extended, the Jackson direct laryngoscope is introduced, lifting the tongue and epiglottis forward until the vocal cords are seen, and the esophagoscope or bronchoscope as the case may be, is passed by direct vision. The laryngoscope is now removed and the esophagus or bronchi explored until the foreign body is located and removed. As soon as the scopes are passed, the head is brought forward slightly, relieving the strain of the extreme extension. By bending the head and neck slightly to the left, the scope is easily passed into the right bronchus, and then by withdrawing it slightly and inclining the head to the right, the left bronchus is entered. The use of these instruments is not hard and, if done carefully, there is little danger.

REPORT OF CASES

CASE I—July 8, 1925. A boy, eight years old, at the age of two was seized with a sudden coughing spell, was very sick for three weeks, and was thought to have had pneumonia. He had been in poor health since then and had had various diagnoses of bronchitis, asthma and tuberculosis. His condition was growing rapidly worse when finally an x-ray examination was made and a tack found in the left bronchus. As soon as he had recovered sufficiently to travel, he was sent to me from his home in New Mexico, and under ether anesthesia a Killian bronchoscope was passed and the tack quickly located and removed. This case shows the value of the x-ray in obscure chest conditions.

CASE II.—July 11, 1925. A girl, eleven years old, gave a history of having swallowed a Mexican five-cent piece three weeks previously. Liquid foods were all that she had been able to take. The foreign body was located by x-ray, removed through the esophagoscope and the patient returned to her home the following day.

CASE III.—March 8, 1926. A female, eight months of age, swallowed an open safety-pin. The pin was small and lodged just within the entrance to the esophagus, and fortunately the closed end was uppermost, which made it a rather easy procedure to remove through the esophagoscope.

CASE IV.—May 3, 1926. A boy, one year old, while eating an apple, aspirated a piece of the core into the trachea. It was necessary to remove the apple piece by piece because of its friable nature. A localized pneumonia developed in the lower right lobe. Recovery was complete in ten days.

CASE V.—June 2, 1926. A female, one year

old, aspirated a raw frijole-bean. The child had two severe choking spells following efforts of the parents to dislodge the bean by holding her head down, and slapping the child on the back. The bean would merely wedge against the under side of the vocal cords and shut off the passage of air until it again slid back into the trachea. Under ether anesthesia, the bean was easily grasped through a 6 mm. Killian bronchoscope, but it was so swollen from the moisture in the lung that I was unable to remove it between the vocal cords. It was necessary to push the bean down to the bifurcation of the trachea, where I bit it off, piece by piece, with the forceps, and removed it completely in that way. The patient was able to return to her home the following day.

* * * * *

In connection with the use of the esophagoscope in the treatment of esophageal strictures, I wish to mention a case I recently had in Santa Barbara, California. A two year old child swallowed some lye, developing a stricture of the esophagus at the level of the fifth dorsal vertebra. Several unsuccessful efforts had been made to pass bougies by the usual methods, but by working through the esophagoscope by direct vision, I was able to locate the small passageway and follow it through with my bougies until the stricture was completely dilated. After that I was able to pass the bougies from time to time without the use of the esophagoscope, and when I left there, the patient was able to swallow all of its food without difficulty.

DISCUSSION

DR. F. P. SCHUSTER demonstrated the Hasienger instrument for bronchoscopy, citing its superiority over the Lynch suspension. A much less unwieldy apparatus and possessing no danger of fracture of the cervical vertebrae—a danger that cannot entirely be eliminated in the use of the Lynch suspension.

DR. S. A. SCHUSTER pointed out the necessity of careful physical examination of the chest and radiographs in all cases where bronchoscopy is indicated. He stated that the suspension apparatus seemed unnecessary and dangerous. In cases of stricture of the esophagus he recommended bougienage from below through a gastrotomy. He demonstrated the instrument of Kahler, of Vienna, which was both an instrument of simplicity and one in which both hands of the operator were free.

DR. J. A. RAWLINGS congratulated the three men who are doing this class of work in El Paso, stating that the Southwest was fortunate in having men competent to do this class of work that requires such skill.

DR. F. P. MILLER recalled the days when he and Dr. Cathcart removed foreign bodies by utilizing the fluoroscope and uterine forceps.

ARIZONA STATE MEDICAL ASSOCIATION

Yuma, Ariz., April 21 to 23, 1927

The Thirty-sixth Annual Session of the Arizona State Medical Association, held a very successful meeting, as the guests of the Yuma County Medical Society, at Yuma,

Ariz., April 21 to 23, 1927. An outline of the general scientific program follows:

The first general session was called to order at 10 a. m., on April 21st, in the Elks Hall, Dr. George A. Bridge of Bisbee, president, in the chair.

Rev. Brown of Yuma gave the invocation.

Dr. Harry A. Reese, on behalf of the Yuma County Medical Society and the honorable mayor of Yuma, welcomed the members and guests to Yuma, with the following eloquent address:

Mr. President, Fellows of the Arizona Medical Association, Visiting Physicians, and Friends: Yuma, the Sunshine Capital of the Great Southwest, bids you a hearty welcome. Yuma is the Sunshine Capital, and sunshine is Yuma's capital. Sunshine spreads a carpet of velvet green over Yuma Valley at Christmas time; ripens the winter gardens; puts sugar in the grapes, money in the bank, iron in the blood, roses in the cheeks, and tan on the backs. But beneath that coat of tan you may find hearts of gold and between the rosy cheeks tongues of silver; silver tongues because they dare speak no evil of any man, but proclaim the beauty of fraternal love, "peace on earth, good will to men."

We welcome you into our homes where the single standard of morality is believed and taught.

Every fraternal order in the city opens the doors to their most sacred chambers that worthy brothers may enter in. The portals to every church stand ajar while the chimes of the bells invite you: "Wait and worship while the night sets her evening lamps alight through all the sky."

The Medical Society of Yuma County welcomes you as battle-scarred veterans in the eternal fight against disease and death. You have won more battles than you have lost.

The scientific program is well worth your while, and each of us should be a better physician because of this assemblage. But, just as friends, we welcome you to the banquet table of good things. Eat, drink and be merry. There is plenty of water in the Colorado, and it is settled, filtered, and chlorinated; or you may imbibe freely of milk from some of the finest dairies in the state, and eat, say, this is where they grow. We want you to tell all the old jokes over again about the excessive heat of Yuma. And don't forget the one about the individual who died and went to a climate supposed to be hotter than this, and had to be chained to a petrified log to keep him from coming back after his overcoat. But at the same time please remember that if he had been contented with his lot and a "booster" for his town, he might have stayed in Yuma in the first place; and even at this late day if he should break his chains and come back, we would give him the glad hand of fellowship. Then if he failed after the second trial, and did not join our Chamber of Commerce we would kick him out for good. And if, perchance, some of you may have served time in Yuma, in the old territorial days, we invite you to look over your old stamping ground on Prison Hill. Only a few of the old landmarks remain, and they are crumbling before the toilers who will begin at once the construction of a quarter-million dollar hotel. So visit the old spot today. You will not know it when you come back again.

Yuma's Honorable Mayor, Mr. A. L. DeMund, bids me say:

We bring the keys to this fair city. We welcome you. This cold reception is a pity. We welcome you.

We like to see your happy smile. We welcome you. Take off your hat and stay awhile. We welcome you.

We're mighty glad to have you here. We welcome you.

This is our home the whole long year. We welcome you.

Throw off your coat, turn on the fan. We welcome you.

The way you'll sweat will beat the band. We welcome you.

Our hides are tan. Our hearts are gold. We welcome you.

Don't be afraid, you won't take cold. We welcome you.

We welcome you with hot sunshine. We welcome you. We welcome you with strong "moonshine." We welcome you.

We like to see your happy smile. We welcome you. Take off your hat and stay awhile. We welcome you.

Dr. Willard Smith, of Phoenix, on behalf of the Association, responded to this welcome as follows:

"I am inclined to believe that Dr. Reese meant it. At any rate, it feels good to receive words of welcome of that sort. While he was talking, it occurred to me that there is one story I have never heard about Yuma. We have heard many stories about folks who go from here to hell, but I have never heard of any one who went from here to heaven. That would be too cruel. On behalf of the Association, we acknowledge this welcome with thanks and will try to behave ourselves while we are your guests."

Dr. Bridge then introduced the incoming president, Dr. Charles S. Vivian of Phoenix, who took the chair. Dr. Vivian announced that the President's Address, usually scheduled for this time on the program, had, for special reasons, been set for another time, and called for the first paper on the general program.

Dr. Frank J. Milloy, of Phoenix, read his paper on "Blood Transfusion," with description of method and results of sixty transfusions. The method advocated was a citrated blood method, using large syringes.

Discussion of the paper was opened by Dr. A. C. Carlson, of Jerome, who questioned the advantages of the method described over the direct method. Discussion was continued by Drs. J. I. Butler of Tucson, R. D. Kennedy of Globe, with Dr. Milloy closing.

The next two papers were read as a symposium. Dr. A. B. Cooke, of Los Angeles, presented the subject of "The Use and Abuse of Iodine in the Treatment of Goitre." Dr. Ross Moore, of Los Angeles, read a paper on "Intangible Thyroid Manifestations." Dr. Cooke's paper discussed the proper use of iodine in the different types of goitre and the abuse of iodine. Dr.

Moore's paper discussed the relation of thyroid disease to nervous and mental symptoms.

The discussion was opened by Dr. Willard Smith of Phoenix, who stated that these two papers represented the approaches to two ends of a bridge which would yet span the gulf of the things we do not know about thyroid disease; he discussed Dr. Moore's paper at some length. The discussion was continued by Dr. J. I. Butler of Tucson. Dr. Cooke and Dr. Moore each extended their remarks, in closing, explaining points which required emphasis.

Afternoon Session, April 21.

The first feature of the afternoon program was the demonstration of the "Yavapai Plan," by the discussion group from Prescott and Whipple. Dr. C. E. Yount first described the method and the objects to be attained by it. Dr. R. N. Looney acted as chairman of the group, presenting the first speaker, Dr. W. E. McWhirt, of Whipple, who recited the case history to be discussed. Dr. I. D. Loewy, of Whipple, took up the discussion, eliminating all the possible diagnoses except one, and Dr. John W. Flinn, of Prescott, then discussed the reasons for making this diagnosis. Without doubt, this was the star feature of the program. The discussion by Dr. Cabot and the autopsy findings were then read.

The next paper was by Dr. C. A. Thomas, of Tucson, on "Surgical and Postural Treatment of Diffuse Peritonitis." He advocated a prone position with hips raised, long incision left open for drainage, and large quantities of saline per rectum. The discussion was opened by Dr. Meade Clyne of Tucson, who was not entirely convinced of the uniform advisability of the method. Discussion was continued by Dr. Ross Moore of Los Angeles, Dr. J. I. Butler of Tucson, Dr. Willard Smith of Phoenix, Dr. J. M. Greer of Mesa, Dr. H. T. Bailey of Phoenix, Dr. H. A. Reese of Yuma, Dr. R. D. Kennedy of Globe, Dr. C. E. Yount of Prescott, Dr. George A. Bridge of Bisbee, Dr. A. B. Cooke of Los Angeles, the majority of the speakers being very commendatory in their comments. Dr. Thomas closed the discussion.

The next feature of the program was a presentation by Dr. Stuart Pritchard, of Battle Creek, Mich., of the subject of "Thoracic Pain." Dr. Pritchard, who is an old favorite on the program of the Arizona meetings, gave his usual concise and lucid presentation of the various types of chest pain, their causes, diagnosis and treatment. The discussion was opened by Dr. John W.

Flinn, of Prescott, continued by Dr. H. T. Bailey of Phoenix, Dr. W. W. Watkins of Phoenix, Dr. George A. Bridge of Bisbee, Dr. Willard Smith of Phoenix, Dr. J. I. Butler of Tucson. Dr. Pritchard closed.

The paper of Dr. Bernard L. Melton of Phoenix, on "Headache of Ocular Origin," was read by title, Dr. Melton being detained by illness.

Morning Session, April 22.

First paper was by Dr. A. A. Shelley of Phoenix, on "Granuloma Fungoides, with Report of a Case." The case reported was a generalized lesion, apparently hopeless, in which all lesions had disappeared under x-ray treatment. Discussion was opened by Dr. W. Warner Watkins of Phoenix, who described the method of x-ray treatment. Discussion was continued by Dr. T. T. Clohessy of Phoenix, who had first diagnosed the condition in this patient, Dr. O. H. Brown of Phoenix, Dr. J. I. Butler of Phoenix, with Dr. Shelley closing the discussion.

Dr. M. C. Comer, of Tucson, read his paper on "Report of Six Unusual Cases," which were recited in detail. Discussion was opened by Dr. J. J. McLoone of Phoenix, who discussed briefly each of the six cases, paying special attention to screw-worm infestation. Dr. H. T. Bailey, of Phoenix, continued the discussion, which was participated in by Dr. R. D. Kennedy of Globe, and Dr. J. I. Butler of Tucson, Dr. Comer having no further comment.

The next paper was by Dr. R. J. Stroud of Tempe, on "Myiasis in the Southwest, with Particular Reference to the Species *Chrysomyia Marcellaria*." Sixteen cases of screw-worm infestation had been treated, with one death. Discussion was opened by Dr. C. E. Yount of Prescott, who first called the attention of the profession of Arizona to this subject in 1907. Discussion was continued by Dr. H. D. Ketcherside of Yuma, Dr. J. J. McLoone of Phoenix, with Dr. Stroud closing.

At this point in the program, another special feature was given, with the presentation of the subject of "Treatment of Anginal Pain by Injection of the Cervical Sympathetic Ganglion." Dr. Walter Bernard Coffey, Chief Surgeon of the Southern Pacific Railroad, San Francisco, gave a brief summary of the development of this method of treatment, which was originated by him. The anatomical, clinical and surgical studies have extended over several years.

Dr. Philip King Brown of San Francisco, who has been the clinical collaborator with

Dr. Coffey in this development, spoke of the medical phases of angina and the methods of study pursued, with the types of cases finally subjected to surgical treatment.

Dr. John D. Humber of San Francisco, who has worked for two years at Tulane University in the anatomical researches on the sympathetic nerves and ganglia, presented his subject with about eighty lantern slides, showing the entire anatomy of the sympathetic nerves, after injections of the nerve sheaths with distilled water. Many nerves whose existence was never before proven, were distinctly shown. This research work is being prepared for publication in monograph form. Dr. Hilary D. Ketcherside, of Yuma, expressed the appreciation of the Association for this excellent special feature.

Afternoon Session, April 22

The paper by Dr. E. G. Colby of San Diego, Calif., on "Brittle Bones and Blue Sclera," was read by Dr. George E. Shields of Yuma, and the four cases described in the paper were shown. Discussion was opened by Dr. R. D. Kennedy of Globe, with discussion by Dr. D. F. Harbridge of Phoenix, and Dr. Shields closing.

Dr. Orville H. Brown, of Phoenix, summarized his paper on "Some Fundamental Principles of Diet," with special reference to hospital diets. Discussion was opened by Dr. I. D. Loewy of Whipple. It was continued by Dr. Philip King Brown of San Francisco. Dr. R. J. Callander of Tucson, Dr. R. J. Stroud of Tempe, with Dr. O. H. Brown closing.

The next paper was by Dr. Nelson D. Bravton of Miami, on "Lupus Vulgaris." Dr. Bravton presented a patient to illustrate his paper. Discussion was opened by Dr. T. T. Clobessy of Phoenix, continued by Dr. Victor Randolph of Phoenix, Dr. W. W. Watkins of Phoenix, with closing remarks by Dr. Bravton, expressing the appreciation of the Association for the graciousness of the patient in appearing before the meeting.

Morning Session, April 23.

The first paper of the morning program was by Dr. W. C. Cain of Somerton, on "Treatment of Local and General Infections with Mercurochrome," with recital of several illustrative cases. Discussion was opened by Dr. R. J. Stroud of Tempe, whose experience had not been favorable. Dr. M. C. Harding, of San Diego, continued the discussion which was participated in by Dr.

Chas. S. Vivian of Phoenix, with Dr. Cain closing.

The next paper was by Dr. M. C. Harding, of San Diego, who discussed "Bunions: Different Types, Different Treatment." This paper was illustrated by lantern slides showing the various conditions treated. In the absence of Dr. Edgar H. Brown, of Phoenix, on account of sickness, the discussion was opened by Dr. R. D. Kennedy of Globe, continued by Dr. D. F. Harbridge, of Phoenix, Dr. A. E. Gallant of Los Angeles, with closing discussion by Dr. Harding.

The next paper on the program was on "Pathology and Classification of Appendicitis," by Drs. Harlan P. Mills and W. Warner Watkins, of Phoenix, based on study of records of 350 patients operated at St. Joseph's Hospital during three years. Dr. Watkins asked permission to give up the time allotted this paper to Dr. Alfred E. Gallant of Los Angeles, who was present and had a moving picture illustrating treatment of fractures. This was granted by the Association, and the paper was read by title.

Dr. Charles S. Vivian, president of the Association, at this time gave the President's Address on the subject, "Congenital Valvular Obstruction of the Posterior Urethra." This address appears elsewhere in this issue of SOUTHWESTERN MEDICINE. There was no discussion called for.

The next presentation was paper by Dr. Sterling N. Pierce of Los Angeles, on "The Low or Cervical Transperitoneal Cesarean Section." This very interesting paper was freely illustrated by beautifully colored lantern slides showing the various stages of the operation. The discussion was opened by Dr. Joseph M. Greer of Mesa; it was continued by Dr. A. J. McIntyre of Phoenix, Dr. R. D. Kennedy of Globe, Dr. Willard Smith of Phoenix, Dr. A. C. Carlson of Jerome, Dr. C. A. Thomas of Tucson, Dr. C. E. Irwin of Miami, Dr. Chas. S. Vivian of Phoenix, with closing remarks by Dr. Pierce.

Afternoon Session, April 23.

The first presentation in the afternoon was the moving picture and paper by Dr. A. E. Gallant, of Los Angeles, on "Treatment of Fractures about the Shoulder." The discussion of this presentation was opened by Dr. R. D. Kennedy of Globe, continued by Dr. H. C. Harding of San Diego, with Dr. Gallant closing.

The next paper was by Dr. Clarence E. Rees of San Diego, Calif., on "Cautery in

Treatment of Cancer," advocating the use of the Percy cautery in various forms of malignancy and pre-cancerous lesions. The discussion was opened by Dr. C. A. Thomas of Tucson, continued by Dr. A. E. Gallant of Los Angeles, with Dr. Rees closing.

The final paper of the scientific program was by Dr. E. W. Phillips of Phoenix, on "Orris Coryza," presenting the results of extensive original researches into the relation between orris sensitivity and coryza. The discussion was opened by Dr. Charles S. Kibler of Tucson, continued by Dr. O. H. Brown of Phoenix, Dr. D. F. Harbridge of Phoenix, Dr. M. C. Harding of San Diego, with closing summary by Dr. Phillips.

This closed the scientific program, and the general scientific session adjourned.

MEETINGS OF THE COUNCIL

The first meeting of the Council was held at the Elks' Club, at 9 a. m., April 21st, with the following present:

George A. Bridge, president. chairman.
Charles S. Vivian, president-elect.
D. F. Harbridge, secretary.
C. E. Yount, treasurer.
W. C. Todt, councilor northern district.
W. W. Watkins, councilor central district.

Minutes of the last meeting of the Council, held in Globe in 1926, were read by the secretary. Correction of the entry relative to the Associate Editor was asked for by Dr. Watkins. The Editor in Chief of Southwestern Medicine is appointed by the Board of Managers, which office was held by him (Dr. Watkins). Dr. O. H. Brown, Associate Editor, is the official representative of the Arizona State Medical Association on the editorial staff. With this correction, the minutes were approved.

The report of the Secretary was presented as follows:

The usual routine business of the office has been carried on. Preparation and forwarding to the American Medical Association the annual roll of membership, the answering of an endless amount of correspondence, the filling of questionnaires and information relative to hospitals, nurses, sanatoria, homes, etc., has been taken care of. Much thought and effort was given to a consideration of the draft of the new constitution and by-laws, periodic health examination, conferring with the committee on public welfare, radio talks in conjunction with the Maricopa County Medical Society, etc.

During the absence of the president and secretary, a special meeting of the House of Delegates was called by President-Elect Dr. Charles S. Vivian, for a consideration of the fee schedule of the Arizona Industrial Commission. At a later conference with the Industrial Commission, for final ratification of this schedule, the secretary was present.

The secretary confesses to inefficiency in not securing a seal as directed by the last session. He expects to attend to this matter very shortly. In this

connection, the secretary recommends that he be authorized to secure a proper form of charter to be issued to each component county society.

The accompanying report sets forth the funds received in the collection of annual dues and also the expenditures vouched for:

Dues collected by the secretary and transmitted to the treasurer, from April 25, 1926, to April 16, 1927:

May 27, 1926	Maricopa county	\$20.00
June 2, "	Santa Cruz county	10.00
Sept. 2, "	Mohave county	10.00
Sept. 2, "	Cochise county	90.00
Sept. 7, "	Yuma county	10.00
Sept. 8, "	Yavapai county	10.00
Nov. 2, "	Maricopa county	40.00
Nov. 9, "	Greenlee-Graham county	10.00
Dec. 28, "	Maricopa county	20.00
Jan. 8, 1927	Coconino county	60.00
Jan. 17, "	Greenlee-Graham county	60.00
Feb. 1, "	Navajo-Apache county	50.00
Feb. 10, "	Navajo-Apache county	10.00
Feb. 10, "	Yuma county	20.00
Feb. 17, "	Gila county	230.00
Feb. 18, "	Cochise county	220.00
Feb. 21, "	Yuma county	70.00
Feb. 25, "	Yavapai county	80.00
Feb. 25, "	Navajo-Apache county	10.00
M'h 5, "	Yuma county	10.00
M'h 8, "	Navajo-Apache county	10.00
M'h 11, "	Yavapai county	30.00
M'h 30, "	Cochise county	10.00
M'h 30, "	Mohave county	30.00
M'h 30, "	Pima county	330.00
Apr. 1, "	Maricopa county	800.00
Apr. 1, "	Maricopa county	10.00
Apr. 3, "	Yavapai county	30.00
Apr. 8, "	Pima county	10.00
Apr. 9, "	Yavapai county	10.00
Apr. 14, "	Santa Cruz county	40.00
Apr. 16, "	Yavapai county	40.00

TOTAL - - - - \$2390.00

Warrants drawn on the General Fund, during the period from April 25, 1926, to April 16, 1927:

Apr. 27, 1926—J. H. McWhorter (reporting 1926 meeting)	\$125.00
May 6, 1926—Southwestern Medicine (subscriptions)	468.00
May 10, 1926—American Medical Ass'n (Periodic Health Examination pamphlets)	19.92
June 4, 1926—Martindell, Horne & Co., (Treasurer's bond)	25.00
Sept. 4, 1926—Masonic Temple (rent for special meeting House of Delegates)	10.00
Sept. 14—W. D. O'Neil (expense of special meeting)	27.05
Sept. 18—W. D. O'Neil (expense of Committee on Conference with Industrial Commission)	5.15
Oct. 2—Central Florists (floral tributes for members)	15.00
Dec. 9—D. F. Harbridge (expense secretary's office)	60.00
Jan. 11, 1927—A. C. Taylor Printing Co. (fee schedules of Industrial Commission)	16.50
Jan. 18—A. C. Taylor Printing Co. (office exp.)	3.25
Feb. 22, 1927—St. Louis Button Co. (badges for 1927 meeting)	29.10
April 14, 1927—A. C. Taylor Printing Co. (programs)	28.00

TOTAL.....

853.65

Warrants drawn on Medical	
Defense Fund:	
Jan. 21, 1927—Sloan, Holton & Scott	
(Melick-Rounseville case)	95.45
Annual retainer	100.00
	195.45

Report of the Treasurer was presented, with full explanation of the various items and method of handling funds. Detailed report is as follows:

To the Council and House of Delegates, Arizona State Medical Association:

Gentlemen: I present herewith Treasurer's report for the year ending April 16, 1927. (Books closed this date.)

GENERAL STATEMENT

Total Receipts, all sources:	
Balance General Fund, 1926, \$1,291.38	
(Of this amount \$500.00 is to be transferred to Defense Fund).	
Dues, 1926 (242 members at \$10.00)	2,420.00
Defense Fund	3,066.72
Savings Fund	5,285.69
Total Receipts all funds.....	12,063.79
Total Disburs. all funds.....	1,176.72
Total balance all funds.....	\$10,887.07

ANALYSIS AND STATEMENT BY FUNDS

(1) General Fund:	
Receipts all sources—balance from 1926	\$1,291.38
242 members pro rated at \$4.00	
General Fund	968.00
242 members pro rated at \$6.00	
Medical Defense	1,452.00
Total Receipts Gen. Fund	\$3,711.36
Disbursements, Duly Authorized, Paid from General Fund:	
A. C. Taylor Printing Co.....\$	15.00
J. H. McWhorier	125.00
Southwestern Medicine	468.00
American Medical Association	19.92
Martindell, Horn & Co., treasurer's bond	25.00
Rent hall, special meeting, House of Delegates	10.00
Typing, W. D. O'Neil	27.05
Multigraphing, O'Neil	5.15
Central Florist—Dr. Ancil	
Martin's funeral	15.00
W. D. O'Neil, mimeographing	11.68
D. F. Harbridge, sec. expense	60.00
A. C. Taylor Printing Co.	19.75
Sloan, Hatton, McKesson & Scott	195.45
St. Louis Button Co.	28.53
St. Louis Button Co.57

	1,026.10	
Liquidated Medical Defense Account to date	1,526.55	2,552.65
Bal. in Bank of Arizona, Gen. Fund.....	\$1,158.73	
(2) Defense Fund:		
Bal. in Yavapai County Savings Bank, from 1926 report	\$2,955.66	
Interest June 30, 1926	50.94	
Interest December 31, 1926	60.12	
TOTAL		\$3,066.72

(3) Savings Fund:	
Bal. from 1926 report	\$5,077.38
Interest June 30, 1926	101.54
Dec. 17, 1926, semi-annual coupons from bonds	106.21
Interest December 31, 192656
April 16, 1927, Bal. due from General Fund	1,526.55

Total receipts Sav. Fund	\$6,812.24
Disbursements Savings Fund:	
July 6, 1926, U. S. Bonds First Liberty Loan 4¼%	\$5,000.00
Purchase of bonds	146.62
Rent of Safety Deposit Box	4.00
	5,150.62

Balance in Yavapai County Savings Bank Credit of Savings Account	1,661.62
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(4) Total Amount Available for Medical Defense:	
Defense Fund	\$3,066.72
Savings Fund	1,661.62
U. S. Bonds, First Lib. Loan	5,000.00
	9,728.34

(5) Total Earnings Interest Coupons since last report:	
Defense Fund	\$ 111.06
Savings Fund	102.10
Coup. U. S. B'ds	106.21
	319.37

(6) General Fund—Clearing to Medical Defense:	
From Medical Defense, 1926 Report	\$ 500.00
Medical Defense, 242 members for 1927, at \$6.00	1,452.00
	\$1,952.00

Paid out of Gen. Fund, Med. Defense, 1926	\$230.00
Paid out of Gen. Fund for Med. Defense, 1927	195.45
	425.45
	*\$1,526.55

\$1,526.55 by check April 16, 1927, from General Fund to Savings Fund.

(7) Total Expenses Shown, Charged Against the Proper Funds:	
General Fund..... \$	830.65
Charged to Medical Defense Attorney's Fee, 1927	195.45
Savings Fund, Purchase of Bonds	146.62
Savings Fund, Safety Deposit Box	4.00

	\$1,176.72
Gross Receipts all sources	\$12,063.79
Total expense	1,176.72

Total Balance all funds	\$10,887.07
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(8) List of U. S. Liberty Loan (Converting) Bonds 4¼% Purchased July 6 1926:

Denomination	Serial Number
100	D-00611504
100	B-00885317
100	A-00885316
100	D-00767759
100	E-00767760
500	E-00185115

500E-00185125
500A-00185126
1000C-00100648
1000E-00181905
1000C-00135013

(9) *Recommendations:*

1. That your Treasurer always be a bonded officer.

2. On the basis of our funds and bonds having earned \$319.37 for 1927—while our Medical Defense for that period cost only \$195.45, I would recommend to the Medical Defense Committee the feasibility of a reduction in annual dues to \$8.00.

Respectfully submitted,

C. E. YOUNT, Treasurer.

Dr. Yount stated that, inasmuch as it was necessary to inspect bank records in Prescott, the auditing of the treasurer's records had to be done there. He had, therefore, asked Dr. John W. Flinn to act as an unofficial auditor, which he had done.

Upon motion the report was approved, and Dr. Flinn's service as auditor accepted as official and approved by the Council. The recommendation appended to the report, with reference to dues was not acted upon.

Dr. Watkins' offer to serve as reporter for the session, for the sum of \$125.00 to be paid to Southwestern Medicine, was accepted by vote.

The second meeting of the Council was held April 23, at 9 a. m., in the Elks' Club, with Charles S. Vivian, President, in the chair; present: George A. Bridge (retiring president), D. F. Harbridge (secretary), W. C. Todt and W. W. Watkins (councilors).

Upon motion, Dr. Orville H. Brown, of Phoenix, was appointed Associate Editor of Southwestern Medicine.

Motion was made and voted, that the president and secretary of the Association be the representatives on the Board of Managers of Southwestern Medicine.

With regard to the matter of budget which, under the new constitution, the Council is expected to present to the House of Delegates for approval, it was decided to ask the House of Delegates to approve the necessary expenses of the Association, without budget, for the coming year, as the time is too short to make up a proper budget for this year.

Council adjourned sine die.

D. F. HARBRIDGE,
Secretary.

HOUSE OF DELEGATES

First Meeting, April 21, 4 p. m.

Present:

President—Chas. S. Vivian.

Secretary—D. F. Harbridge.

Treasurer—C. E. Yount.

Councilors—W. C. Todt (Northern District).
W. W. Watkins (Central District).

DELEGATES

Cochise county—Geo. A. Bridge and John Cook.

Coconino county—F. P. Manning.

Yavapai county—John W. Flinn and R. N. Looney.

Maricopa county—H. T. Bailey, O. H. Brown, J. M. Greer, A. J. McIntyre, Victor Randolph, Willard Smith, A. A. Shelley, J. J. McLoone.

Pima county—J. I. Butler, Meade Clyne.

Gila county—R. D. Kennedy, N. D. Brayton, C. E. Irwin.

Yuma county—H. A. Reese, H. D. Ketcherside.

Santa Cruz—V. A. Smelker.

Minutes of the previous meetings of the House of Delegates were presented by the secretary, and, with one correction, were approved.

President appointed the following Committee on Necrology: Drs. J. I. Butler of Tucson, V. A. Smelker of Nogales and H. A. Reese of Yuma.

Motion made by R. D. Kennedy that the president be authorized to appoint the delegate to the American Medical Association; motion was seconded and carried.

The special Committee on Revision of the Constitution (Drs. D. F. Harbridge, O. H. Brown and W. W. Watkins) reported through Dr. Harbridge, and presented a draft of the proposed new Constitution and By-Laws for action by the House of Delegates. Dr. Harbridge explained that this special committee was appointed a year ago to study the model constitution of the American Medical Association and recommend such changes as they might see fit.

Dr. Flinn stated that, inasmuch as the delegates had not had time or opportunity to study this proposed new constitution and by-laws, it could hardly be acted upon intelligently without consuming much valuable time. He made motion that each county delegation be supplied with a copy of this report, and that a committee of five members of the House of Delegates be asked to make a special study of the report and proposed constitution and report their recommendations at the next meeting of the House. In this way a more general knowledge of the proposed constitution and by-laws would be secured and the House of Delegates could vote more intelligently. This motion was seconded and carried without dissenting vote. The chair appointed on this committee Drs. John W. Flinn (chairman), W. C. Todt, Meade Clyne, George A. Bridge and W. W. Watkins.

Report of the Editor of the Journal was called for and given by Dr. Watkins, as follows:

The official representative of this Association on the editorial staff of Southwestern Medicine is Dr. O. H. Brown, associate editor. As indicated to the Council this morning, the editor-in-chief of your journal is appointed by the Board of Managers of the journal. However, since I am a little more conversant with the business affairs of the journal, I

will make a brief report. The appointment of Dr. Brown as associate editor has materially strengthened the editorial staff. He has taken charge of the book reviews and reviews of current literature, two departments which require considerable work, and which had never before received proper attention.

The journal has been enlarged by eight pages an issue, over last year, by virtue of a more favorable arrangement with our publishers. We have a very excellent publisher, who takes personal interest and pride in this magazine, and who is very generous in his business dealings with the editorial office. There has been a recent change in style in the journal, which we think improves the appearance of the product; the headings are now single column instead of double; the paper has been improved, and with the enlarged issues, our magazine stands high among the constituent state journals of the country.

Report of the Program Committee: Dr. Charles S. Vivian, chairman of the committee, reported as follows:

The innovation was tried, this year, of having the president-elect serve as chairman of the program committee, believing that there would be a decided advantage to him, in presiding, if the program were one which had been in his charge throughout. The actual report of the committee is represented by the program, of which the committee feels proud. Attempt was made to secure synopsis of every paper, and much time and some money was spent on this effort, which was well rewarded, as the finished program, with brief synopsis of nearly every paper, was distributed through the journal thirty days in advance of the meeting.

Whether the experiment of having the president-elect chairman of this committee is a good idea or not, is for you to decide. Personally, I feel that his keen interest in the coming meeting, over which he is to preside, will assure a personal interest which will result in a better program than would any other arrangement.

Report of the Committee on Medical Defense, from Dr. John E. Bacon, chairman, was read, as follows:

The Committee on Medical Defense, composed of Drs. John E. Bacon, chairman, F. T. Wright and D. F. Harbridge, have been in communication relative to defense cases on numerous occasions. The past year certainly has been a most fortunate one for members of the Association, both financially and because of the fact that no new cases have been entered.

Two cases are now pending: One, Bobbie Waugh vs. Dr. L. S. Campbell of Yuma; the other Jack Flannigan vs. Dr. P. A. Melick of Williams. Both look very much as if they would be dismissed by the court.

The total expense for the year was \$195.45. The Medical Defense Fund is developing so splendidly that if we can maintain our present progress for about five years longer, we likely will have a sinking fund, the interest from which will defray all expenses of this department of our activity. The accompanying letter from our attorneys (Sloan, Holton, McKesson & Scott) gives a brief review of their actions on our behalf:

"We beg to report as follows on the pending malpractice cases in the state of Arizona:

"The case of Bobbie Waugh vs. Dr. L. S. Campbell, of Yuma, was filed early in January, 1926. We attacked the insufficiency of the complaint by appropriate pleading and appeared before the court and argued the same. Thereafter the plaintiff filed an amended complaint, which, however, did not as we view it cure the defects in his original complaint.

"There has been no further activity on the part of the plaintiff or his attorneys with respect to this

case since the filing of the amended complaint, and it is apparent that the case will die a natural death unless some activity is shown within the next few months, as the case is subject to being dismissed for want of prosecution at the expiration of two years from the date of filing the same.

"The case of Jack Flannigan vs. Dr. A. C. Rouneville and Dr. P. A. Melick was filed in March, 1926. We attacked the sufficiency of this complaint by appropriate demurrers and motions and argued the matter before Judge Jones of Flagstaff, with the result that an order was made by Judge Jones that the complaint be amended as to certain essential matters. An amended complaint was filed and the matter was allowed to rest for several months. However, recently the plaintiff has endeavored to have the matter set down for trial. This was not done, however, upon the showing made by us that Dr. Melick is ill and unable to attend the trial.

"In that connection it might be well to state that there has been a suggestion on the part of the plaintiff that a compromise will be accepted by him, but we have, as representatives of the Medical Association, given the plaintiff to understand that there will be no compromise in this case. This is upon the theory that it would be an extremely bad precedent to compromise any malpractice case in this state. As the matter now stands our record is very good in these cases, as no contested case has ever resulted in a verdict for the plaintiff in the state of Arizona so far as we know, and so long as that condition exists it will have a very salutary effect upon the bringing of further litigation."

Motion that this report be accepted as read was made by Dr. A. A. Shelley, and voted without dissenting voice.

Report of Councilors: Dr. W. C. Todt, councilor of the northern district, reported that he has not made official visits to any county societies in his district, as none of them, except Yavapai County, hold meetings.

Dr. W. W. Watkins, councilor of the middle district, reported:

That he has not made visits to any county outside of Maricopa, as he could not secure information as to when they were going to meet. Negotiations are pending with some of the doctors in Graham county, looking to an organization of a county society there. This will probably be done some time this year.

The matter of Councilor District Societies has been given some attention. This is a subject which was discussed at some length in the annual conference of secretaries of state associations, in Chicago last November. It would seem that it might well be done, with a one day meeting once or twice a year in each of the districts. In the northern district, for example, a councilor district society at Flagstaff might help to bring together the men of the northern counties, when they would have no other meeting. The type of meeting could vary with the conditions in each district. The ideal meeting which has been tried in other states combines a clinical program with a few papers and a social gathering lasting one day. Such societies can be organized by the councilors, or the council, only when approved by the House of Delegates.

Dr. R. D. Kennedy moved the approval of the proposal to organize councilor district societies where the county societies are favorable to the idea. Motion was seconded and carried.

Under the item of New Business, Dr. J.

J. McLoone reported upon the status of the Lye Caustic Bill.

This bill is a model law, proposed by a special committee, and provides for the labeling of caustic alkalies as poisonous. The bill has passed congress and the legislatures of fifteen states. The bill was introduced into the senate (Arizona), passed by the committee of the whole favorably. It was subsequently objected to by certain grocers; their objections were met and withdrawn. Bill again was approved and recommended out of the committee, but in the closing turmoil of the legislature, bill was side-tracked.

Dr. McLoone made motion that this Association go on record as heartily approving this bill and urging its passage on the ground that it is a life-saving measure, which will cost no one anything and to which there is no objection by any person or organization.

Motion was seconded by Dr. Bailey and carried unanimously.

Session adjourned to meet at 4 p. m., April 22nd.

Second Session, House of Delegates.

Friday, April 22, 1927, 4 p. m.

Called to order by President, Chas. S. Vivian.

Present at roll call:

President—Chas. S. Vivian.

Secretary—D. F. Harbridge.

Councilors—W. C. Todt and W. W. Watkins.

Cochise county—Geo. A. Bridge, John Cook.

Coconino county—F. P. Manning.

Yavapai county—John W. Flinn, R. N. Looney.

Navajo county—John R. Walls.

Maricopa county—O. H. Brown, J. M. Greer, A. J. McIntyre, Willard Smith, A. A. Shelley, Victor Randolph, R. J. Stroud.

Pima county—I. E. Huffman, W. V. Whitmore, C. A. Thomas, J. I. Butler.

Yuma county—H. D. Ketcherside, H. A. Reese.

Gila county—R. D. Kennedy, C. E. Irwin.

Santa Cruz county—V. A. Smelker.

Report of the Committee on Public Welfare was called for. No report presented.

Report of Special Committee on Constitution was called for. Dr. Flinn recited the history of the efforts to have the constitution revised. For two or three years the matter has been before the Association. Last year the model constitution of the American Medical Association was brought before the House of Delegates, at their meeting in Globe, and effort was made to consider it section by section. When it became evident that this would be too time-consuming, by vote of the House of Delegates a special committee, composed of Drs. Harbridge, Watkins and O. H. Brown, was appointed to study this constitution and report their recommendations at this meeting. In order to secure a more general knowledge of the contents of this report, it was referred to another committee of five members, consisting of Drs. Bridge, Watkins, Todt, Clyne and Flinn, for further

study and report at this meeting. The conclusions of this committee of five are now ready and in the hands of Dr. Bridge. The committee does not think it necessary to take up each article in detail, but, with your permission, will pass over those articles on which both committees are agreed, and present only those in which this committee of five recommends changes from the report of the original committee of three. Dr. Bridge will read first the section as proposed by the original committee, and then the modifications recommended by the committee of five, after which he (Dr. Bridge) will move the adoption of the report.

Dr. Smith stated that he knew this committee of five had been working on the constitution, because he had heard them at it most of the night. He did not see where the House of Delegates could improve on the work of the committee and would only waste valuable time trying to discuss these sections. He, therefore, moved that the House of Delegates accept and adopt the Constitution and By-Laws proposed by this special committee of three, as modified by the committee of five, sight unseen. Motion was seconded and question put, resulting in unanimous vote in affirmative.

(The Constitution and By-Laws went into immediate effect, the last clause in the by-laws being to the effect that, immediately upon its adoption, all previous regulations were repealed. The further conduct of the business affairs of the Association were, therefore, under the new constitution).

Dr. Watkins called attention to the fact that the new constitution left the manner of nominations open for any method which the House of Delegates might choose; that there were some matters connected with the selection of officers which it seemed might wisely be considered by a committee; therefore, he moved that a Nominating Committee, composed of Dr. Whitmore, chairman, Dr. Flinn and Dr. Kennedy be constituted for this meeting, to consider these matters and make nominations for officers for the ensuing year. Motion was seconded.

Dr. Flinn stated that he thought it was the sense of the special committee that it would be preferable for the Association to follow the custom of the past and nominate officers from the floor, without committee recommendations. He moved an amendment to the motion that the past custom of floor nominations be followed. After consultation with counsel, the chair declared the amendment out of order, as it nullified the original motion.

The motion of Dr. Watkins was put and lost by large majority.

Dr. Flinn then made motion that nominations be made from the floor. Motion was seconded and carried unanimously.

No further business coming before the House, adjournment was taken until the afternoon of April 23rd.

Open Meeting of House of Delegates

April 23, 1927.

Roll call showed following present:

President—Charles S. Vivian.

Secretary—D. S. Harbridge.

Councilors—W. C. Todt, W. W. Watkins.

Yavapai county—R. N. Looney, John W. Flinn.

Maricopa county—O. H. Brown, J. M. Greer, A. J. McIntyre, Victor Randolph, Willard Smith, R. J. Stroud.

Pima county—I. E. Huffman, W. V. Whitmore, C. A. Thomas.

Yuma county—H. A. Reese, George Shields.

Gila county—R. D. Kennedy, C. E. Irwin.

Report of Committee on Necrology was called for. Dr. W. V. Whitmore stated that he had been asked by Dr. Butler, chairman of this committee, to serve in his stead. The committee found considerable work, as there have been eight, possibly more, deaths in the membership during the past year. The report is not ready, and only a partial report can be made.

The president requested Dr. Whitmore to continue as chairman of the committee, complete the report and send it in for publication with the minutes of the meeting, or at such time as it may be ready.

Report of the Council: This was given by the secretary, who abstracted the treasurer's report, read the secretary's report and the report of the Medical Defense Committee. He stated that the Council was unable, in the short time available since the adoption of the new constitution, to make up a budget as provided in the new by-laws, and asked permission from the House of Delegates to continue the financial policy of the Association, as in the past, for the coming year. Dr. O. H. Brown, of Phoenix, had been appointed Associate Editor of Southwestern Medicine, and the president and secretary of the Association, ex-officio members of the Board of Managers of that journal.

Motion by Dr. Kennedy that the Report of the Council be accepted, and the request of the secretary relative to financial policy be granted. Seconded and carried unanimously.

The president stated that, under the new constitution, the Committee on Public Welfare should be nominated by the chair and ratified by the House of Delegates. Inasmuch as the member in mind for the chairmanship of this committee was not at the meeting, and it seemed best to consult with him and other proposed members of the

committee before appointing them, permission was asked to make these appointments later.

Motion by Dr. Flinn that the House of Delegates ratify the appointments of the president, to this committee, when he has made them. Seconded and carried.

As member of the Committee on Medical Defense, Dr. John E. Bacon was nominated to succeed himself. Appointment was ratified by unanimous vote.

New Business: Dr. C. A. Thomas presented the matter of the possibility of securing the aid of the University of Arizona in their Extension Department, in having some post-graduate work for the physicians of the state. If we could work out a plan whereby several nationally recognized authorities in medicine or surgery could be brought to the University and give courses over a period of five or six days, it would certainly seem to be a very attractive plan. The University authorities are favorable to the idea, but have raised the question as to the degree and extent of the interest which would be manifested by the medical profession, and had asked how many of the doctors would be willing to register and pay a registration fee of \$10.00 for such a course.

Dr. Flinn said that he was much impressed with the idea, and moved that the suggestions of Dr. Thomas be referred to the Council with the approval of the House of Delegates, and with power to act. Motion was seconded and unanimously carried.

Dr. Harbridge called attention to the manual on periodic health examinations which was mailed to all members of the Association. So far nothing has been done in this line in the state. Moved that a committee of three be appointed to formulate definite plans and try to get some interest in this work. Motion was seconded and carried.

President appointed on this committee Drs. D. F. Harbridge (chairman), O. H. Brown and R. J. Stroud.

Election of Officers: Nominations for President-elect being called for, Dr. W. V. Whitmore, in nominating DR. A. C. CARLSON, of Jerome, for this office, recalled that his one contact with Dr. Carlson in meetings of the Association had been a humiliating one. At the last meeting in Yavapai County, after delivering three addresses of welcome for the Association in Prescott, the meeting moved to Jerome. Dr. Carlson, who had recently been elected mayor of Jerome, gave an address of welcome so flavored with accompanying refreshments, that all Dr. Whitmore's efforts

were completely eclipsed. Time does not permit to enumerate all the excellent qualities which fit him for this position, but with Dr. Carlson as President-elect and then President, the Association affairs will be in excellent hands. Nomination was seconded by Dr. J. M. Greer of Phoenix.

Motion was made, seconded and carried, that nominations close and the secretary cast the unanimous ballot of the Association for Dr. A. C. Carlson as President-elect.

For Vice-president of the Association, Dr. C. A. Thomas nominated Dr. Hilary D. Ketcherside of Yuma. Dr. H. A. Reese, of Yuma, seconded this nomination. Motion was made, seconded and carried that the nominations close and the secretary cast the unanimous ballot of the Association for Dr. H. D. Ketcherside as Vice-president.

For Secretary of the Association, Dr. W. C. Todt nominated Dr. D. F. Harbridge. Motion was made, seconded and carried that the nominations close and the president cast the unanimous ballot of the Association for Dr. Harbridge as Secretary.

Dr. Harbridge stated that this will be the eleventh year he has served as Secretary. He knew very little about the job at that time, but thought it might be an opportunity to help develop the Association. The work is done under some disadvantages, but if the organization feels that he can serve in this capacity, he is willing to continue, provided the Association will feel perfectly free to make a change whenever they so desire.

For Treasurer of the Association, Dr. C. E. Yount was nominated. Motion was made, seconded and carried that nominations close and the secretary cast the unanimous ballot of the Association for Dr. Yount as treasurer.

There was some discussion over the office of Councilor for the southern district, looking toward the selection of a suitable man. Dr. C. A. Thomas of Tucson was finally selected by vote of the House of Delegates.

The president announced that Dr. W. C. Shultz, of Tucson, had been appointed delegate to the American Medical Association. Motion was made, seconded and carried that this appointment be ratified.

Dr. Harbridge nominated Dr. John W. Flinn as National Legislative Committee-man. Motion made and seconded that Dr. Flinn be elected to this office. Carried.

With regard to the place of meeting for 1928, Dr. Huffman extended the invitation

of the Pima County Medical Society to hold the meeting in Tucson. Dr. Todt made motion that this invitation be accepted; motion was seconded and carried unanimously.

Dr. O. H. Brown moved a cordial vote of thanks to the Yuma County Medical Society for their lavish entertainment. Motion was carried by rising vote.

Adjournment was taken sine die.

D. F. HARBRIDGE,
Secretary.

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WANTED—Salaried appointments for Class A Physicians in all branches of the Medical Profession. Let us put you in touch with the best man for your opening. Our nation-wide connections enable us to give superior service. Aznoe's National Physicians' Exchange, 30 North Michigan, Chicago. Established 1896. Member The Chicago Association of Commerce.

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DR. C. M. YATER, Roswell, New Mexico.....	Associate Editor
DR. ORVILLE H. BROWN, Phoenix, Arizona.....	Associate Editor

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DR. C. M. YATER LEAVES NEW MEXICO

After many years residence and practice in New Mexico, Dr. C. M. Yater, of Roswell, retiring secretary-treasurer of the New Mexico Medical Society and Associate Editor of Southwestern Medicine, has removed to Cleburne, Texas, to be associated in practice there with his two brothers.

The service which Dr. Yater accomplished for the New Mexico Medical Society is an achievement of which any man should be proud. He practically reconstructed the organization during his service of four or five years as secretary, bringing it from the bottom of the list in proportionate membership to an honored position near the top.

His service to Southwestern Medicine was no less distinguished, as Associate Editor. His interest in recording the medical activities of his state was keen and never waned during these years. It has been a real pleasure to work with him, and the editorial office will see this relation severed with great regret. We wish him many years of success in his new location, and in this we know that the entire medical profession of New Mexico will join heartily.

W. W. W.

GOOD WORK BY PHOENIX CHAMBER OF COMMERCE

When the Wilshire "Ion-a-co" health belt fraud started to exploit the Arizona field, it struck two or three unexpected snags. The first one was a newspaper whose advertising policy excludes from its columns palpable frauds upon its readers. The Arizona Republican refused to accept the advertising, and Wilshire was thereby barred from the chief advertising medium

of the state. The broadcasting stations of Phoenix next refused to allow the broadcasting of direct propaganda, although offered a handsome prize if they would thus prostitute their service.

Finally, the Phoenix Chamber of Commerce, through their Better Business Bureau, took cognizance of the fraud and started active campaign. Through their efforts, the Arizona Gazette, which at first accepted the advertising, refused to continue this. Wilshire had meanwhile, been joined by the Dr. Crane Health Belt outfit, as it seemed that the "pickings" in this field should be good. The Chamber of Commerce, not content with shutting off the advertising privileges, started proceedings through the county attorney's office. The Crane outfit have folded their tents and flitted. Ion-a-co will probably hold on awhile longer, but the field has been spoiled for them.

It is a very refreshing incident to see the business men of a community take the initiative against a medical fraud, asking only from the medical profession their opinion as to the value of the appliance or remedy. The Better Business Bureau in Phoenix used, as their chief source of information, the magazine of the American Medical Association,—"Hygeia."

NEW MEXICO STATE PUBLIC HEALTH ASSOCIATION

The Annual Meeting of the New Mexico State Public Health Association will be held this year at Taos, N. M., on June 2nd and 3rd. This is a very active organization and an excellent program will be presented.

DEATHS IN ARIZONA

The Committee on Necrology, appointed at the Yuma meeting, found themselves faced with the sad obligation of recording suitable resolutions for no fewer than nine members of the Association who had died during the year, two of them while the Association was in session.

On the first day of the meeting, word was received that Dr. Philip B. Newcomb of Tucson had died very suddenly. The expressions of sympathy and regret of the Pima County Society will be found elsewhere in this issue.

On the last day of the meeting, Dr. Leonard Wood of Miami, Ariz., a member of the Gila County Society, died, after an illness of several days.

Among the deaths of the past year, already recorded in this journal, are those of Drs. Ancil Martin, F. W. Baum, L. D. Dameron, and J. A. Ollerton, all of Maricopa County; B. G. Fox of Gila County; Charles F. Hawley of Cochise County; H. W. Purdy of Santa Cruz County, Charles L. Edmundson, of Cochise County.

On the evening of May 6th, the most tragic accident which has befallen the ranks of medical profession of the state in many years occurred, in the death of Dr. Robert W. Eaton of Phoenix. Following an explosion in his home in which a guest was covered with flaming liquid, in a heroic effort to save her life, Dr. Eaton was fatally burned and died twelve hours afterwards. The guest, in whose behalf Dr. Eaton sacrificed his life, was also fatally burned and Mrs. Eaton was dangerously injured by burns over the lower half of the body. Dr. Eaton was associated with Dr. Robt. W. Craig and had established a large practice in Phoenix, where his careful, consistent and thorough work was universally recognized.

PHILIP B. NEWCOMB

The Association gathering in Yuma was shocked by the news of the sudden death of Dr. Philip B. Newcomb on April 21st. The following resolutions of sympathy and regret have been passed by the Pima County Medical Society for publication.

"The members of the Pima County Medical society—in common with the people of the community—were shocked by the untimely death of Dr. Philip B. Newcomb, which occurred April 21, 1927.

"Dr. Newcomb was serving his second

term as secretary of this society—in which position he has made a most enviable record. His strict attention to the duties of the office and his untiring zeal won the respect and affection of all the members.

"He was educated at Washington University, at St. Louis, and selected the field of pathology. He had served in hospitals, asylums and laboratories from Maine to California. A few years ago he served in our own state hospital at Phoenix.

"He was one of the brainy men of this society—of unusual ability and wide experience in his chosen field. His services were most valuable to the profession and the public not only because of his rare skill as a technician but specially because of his intelligence and excellent judgment in the interpretation of his findings.

"His place in the community will not easily be filled."

LEIGH K. PATTON

After a long and heroic struggle with tuberculosis, during which period he created an enviable position for himself in the medical profession of New Mexico, Dr. Leigh K. Patton of Santa Fe has succumbed, answering the last call in the Presbyterian Hospital in Albuquerque, with terminal meningitis.

Dr. Patton graduated from the University of Illinois College of Medicine in 1913. He came to New Mexico in 1918, and served on the staff of the Sunmount Sanatorium for several years. He was much interested and very active in hospital staff and society organizations of Santa Fe County, and will be sorely missed from medical circles of New Mexico.

LEONARD WOOD

In the death of Dr. Leonard Wood, of Miami, Ariz., the profession of Gila County suffer the deprivation of a very valuable member, the only representative of his specialty in the county. Dr. Wood was a graduate of the General Medical College of Chicago, class of 1913. He came to Arizona in 1919 and for four years was associated with Dr. J. J. McLoone in Phoenix. He then moved to Miami to fill a very pressing need for a capable eye, ear, nose and throat specialist. He was very successful and his passing is deeply regretted by the medical profession of the county.

**DR. ROBERT W. EATON
RESOLUTIONS BY ST. JOSEPH'S HOS-
PITAL STAFF**

At the regular monthly staff meeting of St. Joseph's Hospital Staff, on May 9th, the following resolutions were read and adopted for publication:

In the tragic death of our confrere, Robert W. Eaton, who sacrificed himself in an heroic effort to save the life of a guest in his home, the Staff of this hospital has suffered a great loss; therefore,

Be it resolved, that we express our great sorrow in this personal bereavement, and our sincere sympathy for the family and intimate professional associates of Dr. Eaton. We share with them an inexpressible sense of loss from our ranks of one whose high professional accomplishments we wish to recognize; whose fidelity to duty, always shown in his work, was exemplified in his final act of self forgetfulness, as he gave his life for a friend.

By order of the Staff,

WILLARD SMITH, Chairman.

W. Warner Watkins, Secretary.

M. D. TAYLOR

The April issue carried obituary notice for Dr. McDurham D. Taylor, of Aztec, N. M. The following resolutions have been sent in by the medical profession of San Juan County, for publication:

Members of the medical profession of San Juan County are deeply grieved over the departure from their midst of Dr. M. D. Taylor of Aztec, who passed away early Wednesday morning, March 16th, at St. Vincents Hospital, Santa Fe. Cause of death was pneumonia.

No citizen of San Juan County could be missed as much as Dr. Taylor will be. Being a man with extraordinary ability, sound judgment and purity, he took the lead in every good movement, and was the counsel and guide to many a soul.

Dr. Taylor won the distinction of furnishing the best definition of a democrat among 30,000 contestants. The contest was conducted by the Pathfinder not very long ago.

Dr. Taylor was a Royal Arch Mason, member of the Civil Legion, member of Isaac Walton League; member of New Mexico Medical Society, San Juan Basin Medical Society, Colorado State Medical Society, American Medical Association, Health Officer of San Juan County, representative of San Juan County at the Eighth Legislature, former member of New Mexico Board of Education, former member of State Board of Medical Examiners.

Dr. M. D. Taylor was born at Freedom, Kentucky, February 13, 1867. He graduated in medicine from the Kentucky School of Medicine in 1894. Interment was at Aztec, where he has made his home the past twenty-one years. He is survived by his wife, Mrs. Ella Taylor, and his son, Dr. Wm. F. Taylor, both of Aztec, and his daughter, Mrs. Trimbell of Raton, New Mexico.

CHARLES L. EDMUNDSON

In the death of Dr. Charles L. Edmundson, of Bisbee, another representative of the "old Guard" passed away, closing a long and honorable career in Arizona. In addition to his services of many years as a member of the Calumet and Arizona Hospital staff, Dr. Edmundson has also served his community as city and county health officer, as mayor of Bisbee and as a member of the board of education.

He graduated from the University of Colorado School of Medicine in 1891, and has practiced medicine in Arizona more than twenty-five years. He was sixty-five years of age at the time of his death on April 15th, in the Calumet and Arizona Hospital in Bisbee, from uremia.

GENIUS AND CREDULITY

A perfect mentality is like a circle, but very few human intellects attain perfection. Usually there is an unequal development at some point, and this may be so marked in one direction as to constitute genius. Along with this pseudopod development at one point on the circle will usually go instability of some sort. It has long been known to those people who desire to perpetrate a fraud on the public that a man with a high degree of intellectual development in a limited field will be an "easy-mark" if approached from his undeveloped side.

In our recent experiences in Phoenix with the Health Belt frauds, we found that these fakirs had found vulnerable approaches to David Starr Jordan and Dr. Frank Crane, and were allowed to use their names for purposes which should make any honest man turn in his grave. These are not isolated instances. Sir Oliver Lodge, with his marvellous development along the mathematical tangent, has been easy picking for the spiritualists. Preachers, highly developed in the knowledge of spiritual things, are easy marks for the medical frauds who talk only of physical mysteries. Doctors, profoundly versed in the human machinery, are proverbially dumb in financial matters, as any oil stock salesman can testify.

However, the medical profession can hardly forgive Dr. Frank Crane for being misled in a field where he should have sufficient knowledge to detect a fraud easily visible to any high-school graduate. It hardly seems that the plea of genius can apply in such an instance as this.

Caution!

THE *right* gelatine, (Knox Sparkling Gelatine), dissolved and added to milk for the bottle baby, will make it easier for the baby to digest the milk and absorb full nourishment. It largely prevents colic, regurgitation, diarrhea and other baby ailments. It helps malnourished children. It has great value in diets for diabetes, tuberculosis, convalescing patients, surgical cases, etc.

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Any plain gelatine with an acid content—is the *wrong* gelatine. Any gelatine that is flavored, colored or sweetened, is the *wrong* gelatine. Any gelatine not produced under constant bacteriological control is the *wrong* gelatine!

Knox is the approved gelatine because it is all pure, plain gelatine—every particle of it. It is neutral—no acidity! No flavoring. No coloring. No sweetening. All fine bone gelatine—the type of gelatine used and commended as a milk modifier by such eminent medical authorities as Jacobi, Herter, Alexander, Rubrah and Friedenwald.

Some physicians, not realizing the difference in gelatines, occasionally forget to specify *Knox Gelatine* in making their prescriptions. The result is that mothers, in some cases, are buying brands unsuitable for dietary purposes. As a protection, therefore, *we have requested the Government to raise the standards on gelatine.* Pending Government action, may we suggest that you specify *Knox* when you prescribe gelatine?

We have the findings of recognized authorities to prove the importance of *Knox Gelatine* to you in your practice. We have the experience of active physicians. We have valuable laboratory reports, not only discussing gelatine as a milk modifier, but outlining its importance in various kinds of diets. May we send you these reports?

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Add one teaspoonful of *Knox Sparkling Gelatine*—which should first be soaked about ten minutes in a little cold milk and then dissolved over hot water or in hot milk—to the glass of milk. (In infant feeding formulas use 1 tablespoonful of gelatine, dissolved as above, to the quart of milk.)

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CONSTITUTION and BY-LAWS for the ARIZONA STATE MEDICAL ASSOCIATION.

CONSTITUTION

Article I.—Name of the Association

The name and title of this organization shall be the Arizona State Medical Association.

Article II.—Purpose

The purposes of this Association are to promote the science and art of medicine, the protection of public health, and the betterment of the medical profession; and to unite with similar organizations in other States and Territories of the United States to form the American Medical Association.

Article III.—Component Societies

Component Societies shall consist of those county medical societies which hold charters from this Association.

Article IV.—Composition of the Association

This Association shall consist of members who shall be the members of the component county medical societies who have been certified to the headquarters of this Association, and whose dues and assessments for the current year have been received by the Secretary.

Article V.—House of Delegates

The House of Delegates shall be the legislative body of the Association, and shall consist (1) of delegates elected by the component county societies, and (2) the officers of the Association enumerated in Section 1 of Article IX of this constitution.

Article VI.—Council

The Council shall be the Board of Trustees of this Association, and shall be the Finance Com-

mittee of the House of Delegates. It shall consist of the Councilors, the President, the President-Elect, the Retiring President, the Secretary and the Treasurer of the Association. Five of its members shall constitute a quorum.

Article VII.—Sections and District Societies

The House of Delegates may provide for a division of the scientific work of the Association into appropriate sections, and for the organization of such Councilor District Societies as will promote the best interests of the profession, such societies to be composed exclusively of members of component county societies.

Article VIII.—Sessions and Meetings.

Section 1. The Association shall hold an annual session during which there shall be at least two general meetings, open to all registered members, delegates and guests.

Section 2. The time and place for holding each annual session shall be fixed by the House of Delegates, or such authority may be delegated to the Council.

Section 3. Special meetings of either the Association or the House of Delegates may be called by a two-thirds vote of the Council or upon petition by twenty delegates.

Article IX.—Officers.

Section 1. The officers of this Association shall be President, Vice President, President-Elect, Secretary, Treasurer, and three Councilors.

Section 2. The officers, except the Councilors, shall be elected annually. The terms of the Councilors shall be for three years; one member of the Council shall be elected each year. All these officers shall serve until their successors are elected and installed.

Section 3. All officers shall assume office immediately following the session at which they are

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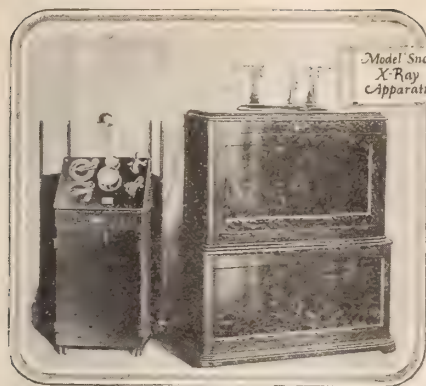
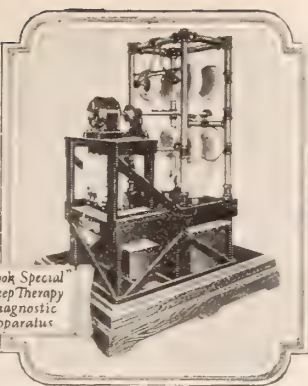
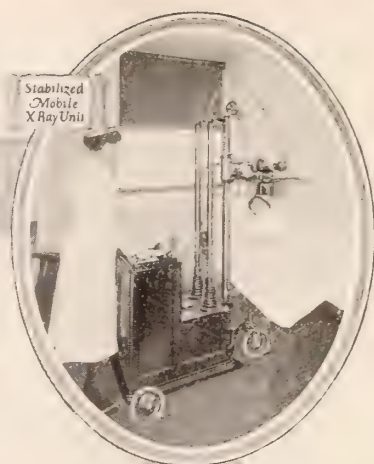
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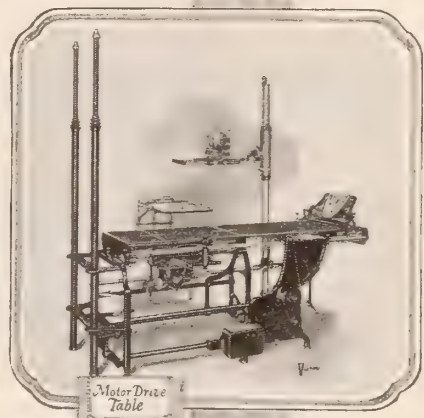
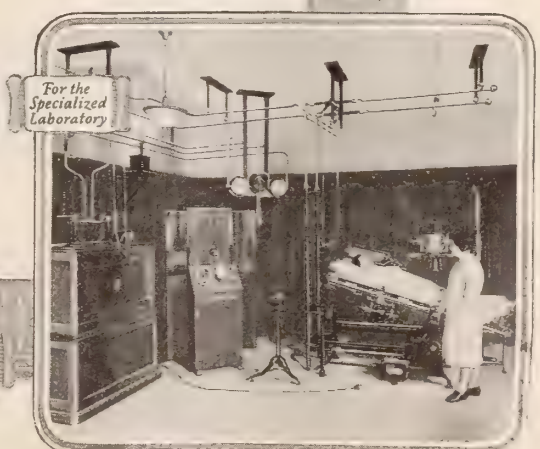
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elected. The President-Elect will assume the office of President at the first session of the Annual Meeting of the year following his election.

Article X.—Funds and Expenses.

Funds shall be raised by an equal per capita assessment on each component society. The amount of the assessment shall be fixed by the House of Delegates. Funds may also be raised by voluntary contributions and in any other manner approved by the House of Delegates. The Council shall submit an annual budget to the House of Delegates. All resolutions providing for appropriations shall first be referred to the Council.

Article XI.—Referendum.

At any general meeting of the Association it may, by a two-thirds vote, order a general referendum upon any question pending before the House of Delegates. The House of Delegates may, by a vote of its members, submit any question to the membership of the Association for its vote. A majority vote of all the members of the Association shall determine the question.

Article XII.—Seal.

The Association shall have a common seal. The power to change or renew the seal shall rest with the House of Delegates.

Article XIII.—Amendments.

The House of Delegates may amend any article of this Constitution by a two-thirds vote of the Delegates present at any Annual Session, provided that such amendment shall have been presented in open meeting at the previous Annual Session, and that it shall have been published twice during the year in the bulletin or journal of this Association, or sent officially to each component society

at least two months before the meeting at which final action is to be taken.

BY-LAWS

Chapter I.—Membership.

Section 1. The name of a physician on the official roster of this Association, after it has been properly reported by the secretary of his county society, shall be prima facie evidence of membership and of his right to register at the Annual Session.

Section 2. No person who is under sentence of suspension or expulsion from any component society of this Association, or whose name has been dropped from its roll of members, shall be entitled to any of the rights or benefits of this Association in any of the proceedings of the Annual Session until he has complied with the provisions of this section of the By-Laws.

Section 3. Each member in attendance at the Annual Session shall register, when his right to membership has been verified by reference to the records of this Association. No member shall take part in any of the proceedings of this section of the By-Laws.

Chapter II.—General Meetings.

Section 1. The General Meetings shall be open to all registered members and guests. Before them, at such time as may have been arranged, shall be delivered the annual report of the retiring President and the address of the incoming President and the annual orations.

Section 2. No address or paper, except those mentioned in Sec. 1 of this Chapter, shall occupy

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more than twenty minutes in its delivery. No member, except by unanimous consent, shall speak more than once in the discussion of any paper nor longer than five minutes at any one time.

Section 3. All papers read before this Association shall be its property. Each paper, when it has been read, shall be deposited with the Secretary. Authors of papers read before this Association shall not cause them to be published elsewhere until after they have been published in its Journal.

Chapter III.—House of Delegates.

Section 1. The House of Delegates shall meet annually at the time and place of the Annual Session.

Section 2. Each component county society shall be entitled to send each year one delegate or one alternate to the House of Delegates for each ten full-paid members or fraction thereof in this Association; provided, however, that each county society shall be entitled to at least one delegate or one alternate.

Section 3. Fifteen delegates shall constitute a quorum of the House of Delegates. All meetings of the House of Delegates shall be open to members of the Association.

Section 4. From among members of the House of Delegates the President, for the purpose of expediting proceedings, shall appoint such Reference Committees as are necessary to which reports and resolutions shall be referred.

Section 5. The House of Delegates shall elect delegates to the House of Delegates of the American Medical Association in accordance with the Constitution and By-Laws of that body.

Section 6. The House of Delegates shall divide the State into Councilor Districts, specifying what counties each district shall include, and, when the best interest of the Association and the profession will be promoted thereby, may organize in each a district medical society, of which all members of the component county societies shall be members.

Section 7. The House of Delegates shall have authority to appoint committees for special purposes from among members of the Association who are not members of the House of Delegates. Such committees shall report to the House of Delegates, and may be present and participate in the debate on their reports.

Section 8. The House of Delegates shall approve an annual budget of expense.

Section 9. It shall approve all memorials and resolutions issued in the name of the Association before they shall become effective.

Chapter IV.—Election of Officers.

Section 1. The election of officers shall be the first order of business of the House of Delegates in open meeting at the last session of the House.

Section 2. All elections of officers shall be by ballot and a majority of the votes cast shall be necessary to elect.

Chapter V.—Duties of Officers.

Section 1. The President shall preside at all meetings of the Association and of the House of Delegates; he shall appoint all committees not otherwise provided for; he shall deliver an annual address at such time as may be arranged, and shall perform such other duties as custom and parliamentary usage may require. He shall be the real head of the profession of the State during his term of office, and, as far as practicable, shall visit, by appointment, the various sections of the State and assist the Councilors in building up the county societies, and in making their work more practical and useful. He shall remain a member of the Council during the year succeeding his term as president.

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Section 2. The Vice-President shall assist the President in the discharge of his duties. In the event of the President's death, resignation, removal or extended absence, the Vice-President shall assume the duties of the office.

Section 3. The President-Elect shall be a member of the Council, and shall be chairman of the Committee on Scientific Work.

Section 4. The Treasurer shall give bond in the sum of ten thousand dollars. He shall receive all funds due the Association, together with bequests and donations. He shall pay money out of the Treasury only on a written order of the President, countersigned by the Secretary; he shall subject his accounts to such examination as the House of Delegates may order, and he shall annually render to the Council an account of his doings and of the state of the funds in his hands.

Section 5. The Secretary shall attend the General Meetings of the House of Delegates, and shall keep minutes of their respective proceedings in separate record books. He shall be Secretary of the Council. He shall be custodian of all record books and papers belonging to the Association, except such as properly belong to the Treasurer, and shall keep account of and promptly turn over to the Treasurer all funds of the Association which come into his hands. He shall provide for the registration of the members and delegates at the Annual Session. He shall, with the cooperation of the secretaries of the component societies, keep a card-index register of all the legal practitioners of the State by counties, noting on each his status in relation to his county society, and shall transmit a copy of this list to the American Medical Association, transmitting to its secretary each month a report containing the names of new members and the names of those dropped from the membership roster during the preceding month. He shall conduct the official correspondence, notifying members of meetings, officers of their election and committees of their appointment and duties. He shall employ such assistants as may be ordered by the Council and shall make an annual report to the House of Delegates. He shall supply all component societies with the necessary blanks for making their annual reports, and shall collect from them the regular per capita assessments and turn the same over to the Treasurer. The amount of his salary shall be fixed by the Council.

Chapter VI.—Council.

Section 1. The Council shall meet at convenient times during the Annual Session, and at such other times as necessity may require, subject to the call of the chairman. It shall make an annual report to the House of Delegates.

Section 2. Each Councilor shall be organizer, peacemaker and censor for his district. He shall visit each county in his district at least once a year for the purpose of organizing component societies where none exist, for inquiring into the condition of the profession, and to keep in touch with the activities of and to aid in the betterment of the component societies of his district. He shall make an annual report of his work, and of the condition of the profession of each county in his district at the Annual Session of the House of Delegates. The necessary traveling expenses incurred by each Councilor in the line of duties herein imposed may be allowed on a proper itemized statement, but this shall not be construed to include his expense in attending the Annual Session of the Association.

Section 3. The Council shall be the Board of Censors of the Association. It shall consider all questions involving the right and standing of members, whether in relation to other members, to

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the component societies, or to this Association. All questions of an ethical nature brought before the House of Delegates or the General Meeting shall be referred to the Council without discussion. It shall hear and decide all questions of discipline affecting the conduct of members or component societies on which an appeal is taken from the decision of an individual Councilor. Its decision in all cases, including questions regarding membership in this Association, shall be final.

Section 4. Charters shall be issued to county societies only on approval of the Council, and shall be signed by the President and Secretary of this Association. Upon the recommendation of the Council, the House of Delegates may revoke the charter of any component society whose actions are in conflict with the letter or spirit of this Constitution and By-Laws.

Section 5. In sparsely settled sections the Council shall have authority to organize the physicians of two or more counties into societies, to be suitably designated so as to distinguish them from district societies, and these societies, when organized and chartered, shall be entitled to all rights and privileges provided for component societies until such counties shall be organized separately.

Section 6. The Council shall provide for and superintend the issuance of all publications of the Association, including proceedings, transactions and memoirs, and shall have authority to appoint an editor and such assistants as it deems necessary. It shall prescribe the methods of accounting and shall audit all accounts of this Association. The Council shall prepare an annual budget providing for the necessary expenses of the As-

sociation, which shall be presented with its annual report to the House of Delegates.

Chapter VII.—Committees.

Section 1. The standing committees of this Association shall be as follows:

A Committee on Scientific Work.

A Committee on Public Welfare.

A Committee on Medical Defense.

Unless otherwise provided in these By-Laws, each of these committees shall consist of three members, each of whom shall serve for a term of three years. One member of each of these committees shall be appointed annually by the President, by and with the consent of the House of Delegates, provided that at the Annual Session of 1927 one member of each of the foregoing committees shall be appointed for a term of three years, one each for a term of two years, and one each for a term of one year.

Section 2. The Committee on Scientific Work shall consist of three members, with the President-Elect as chairman, the Secretary as one member, and a third member from the local entertaining society for the next Annual Meeting. This committee shall determine the character and scope of the scientific proceedings of the Association for each session, subject to the instructions of the House of Delegates. Thirty days previous to each Annual Session it shall prepare and issue a program announcing the papers and discussions which will be presented.

Section 3. The Committee on Public Welfare shall consist of three members, with the President and Secretary. There shall be a joint meeting of this committee and an auxiliary committee, as



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provided for in Chapter II, Section 10 of these By-Laws, held annually, as may be ordered on the call of the chairman or three members of the Committee on Public Welfare. The chairman of this Committee, and in his absence, the President, shall act as chairman at the joint committee meetings. Under the direction of this Committee, the joint committee shall represent the Association in securing and enforcing legislation in the interest of public health and of scientific medicine.

Section 4. The Committee on Medical Defense shall prepare plans and establish rules for the defense of members of this Association against whom suits for alleged malpractice have been brought. It may assist in the defense of any member sued for alleged malpractice only if the member was in good standing and had complied with the rules of the committee when the service on account of which suit was brought was rendered.

Chapter VIII.—Dues and Assessments.

Section 1. The annual dues and assessments shall be determined by the House of Delegates, and shall be levied per capita on the members of the Association. They shall be payable on or before January 1, of the year for which they are levied. The Secretary of each component society shall cause to be collected and shall forward to the office of the Secretary of the Association the dues and assessments for its members, together with such data as shall be required for a record of its officers and membership. Any member

whose name has not been reported for enrollment and whose dues for the current year have not been remitted to the Secretary of this Association on or before April 1, shall stand suspended until his name is properly reported and his dues for the current year properly remitted.

Section 2. The record of payment of dues and assessments on file in the offices of the Association shall be final as to the fact of payment by a member and as to his right to participate in the business and proceedings of the Association and of the House of Delegates.

Section 3. Any county society which fails to make the reports required before the Annual Session of the State Association shall be held suspended, and none of its members or delegates shall be permitted to participate in any of the proceedings of the Association or of the House of Delegates.

Chapter IX.—Ethics.

The ethical principles governing the members of the American Medical Association shall govern members of this Association.

Chapter X.—Rules of Order.

The deliberations of this Association shall be conducted in accordance with parliamentary usage as defined in Robert's Rules of Order.

Chapter XI.—Component Societies.

Section 1. All county societies now in affiliation with the State Association or those that may hereafter be organized in this State, which have adopted principles of organization not in conflict

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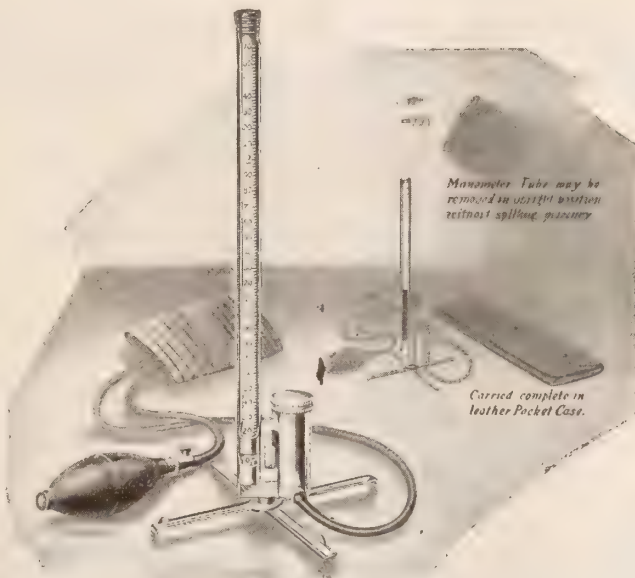
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with this Constitution and By-Laws shall, upon application to the Council, receive charters from this Association, provided that their Constitutions and By-Laws shall have been submitted to the Council and received its approval.

Section 2. Only one component medical society shall be chartered in each county.

Section 3. Each county society shall judge of the qualifications of its members, subject to review and final decision by the Council of the State Association. Every reputable and legally qualified physician who does not practice, nor profess to practice sectarian medicine, and who is a bona-fide resident of the same county, shall be eligible to election to membership.

A member of a component society whose license has been revoked shall be dropped from membership automatically as of the date of revocation. The Council of the State Association shall have authority to suspend or expel a member subject to final action by the House of Delegates should a component county society fail to do so after being so requested by the Council.

A physician living near a county line may hold his membership in that county most convenient for him to attend, on permission of the component society in whose jurisdiction he resides.

Section 4. Any physician who may feel aggrieved by the action of the society of his county in suspending or expelling him, shall have the right to appeal to the Council. A county society shall at all times be permitted to appeal or refer questions involving membership to the Council of the State Association for determination.

Section 5. In hearing appeals the Council may admit oral or written evidence as in its judgment will most fairly present the facts, but in the case

of every appeal both as a board and as individuals, the Councilors shall, preceding all such hearings make efforts at conciliation and compromise.

Section 6. When a member in good standing in a component county society moves to another county in this State he shall be given a written certificate of these facts by the Secretary of his Society without cost for transmission to the Secretary of the society in the county to which he moves. Pending his acceptance or rejection by the society in the county to which he removes such member shall be considered to be in good standing in the county society from which he was certified and in the State Association to the end of the period (respectively) for which his dues have been paid.

Section 7. Each county society shall have general direction of the affairs of the profession in the county and its influence shall be constantly exerted for bettering the scientific, moral and material condition of every physician in the county. Systematic efforts shall be made by each member, and by the society as a whole, to increase the membership until it includes every eligible physician in the county.

Section 8. At some meeting in advance of the Annual Meeting of this Association, each component society shall elect one or more delegates and an equal number of alternates to represent it in the House of Delegates of this Association, in accordance with Chapter III, Section 2, of these By-Laws. The secretary of each county society shall send in a list of such delegates and alternates to the Secretary of this Association before the Annual Session. Representation in the House of Delegates shall be contingent on compliance with the foregoing provision.



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Section 9. The Secretary of each county society shall keep a roster of its members, and, if practicable, a list of non-affiliated physicians, in which shall be shown the full name, address, college, and date of graduation, date of license to practice in this State, and such other information as may be deemed necessary by the Council. He shall send a copy of the program of each county meeting to his district Councilor and to the Secretary.

Section 10. Each county society shall appoint or elect one of its members as a member of the auxiliary Committee on Public Welfare, and the county society secretary shall send his name and address at once to the Secretary of this Association. The Committee on Public Welfare of this Association shall formulate the duties of this auxiliary committee and shall supply each member with a copy. The auxiliary committeemen shall be accountable to their county societies and to the Council for prompt response to and continued cooperation with the Committee on Public Welfare of this Association.

Chapter XII.—Amendments.

Section 1. These By-Laws may be amended at any Annual Session by a majority vote of the delegates present at that session, if the proposed amendment has been properly submitted to the House of Delegates and has lain on the table for one day.

Section 2. Upon the adoption of this Constitution and these By-Laws, all previous Constitutions and By-Laws are thereby repealed.

PERSONALS

DR. E. L. CHRISTENSEN, formerly associated with Dr. J. J. McLoone, in Phoenix, has taken over the practice of Dr. Leonard Wood (deceased) in Miami, Ariz.

DR. C. H. OLIVER, a recent arrival in Arizona, is taking care of the practice of DR. R. C. MARTIN, of Glendale, Ariz. Dr. Martin is in the east taking postgraduate work which is expected to extend through the summer.

DR. LOUIS DUNN, of Minneapolis, is spending several months in Phoenix, and has been a welcome visitor to the various medical meetings. He recently read a short paper before the Maricopa County Medical Society, describing an original method of handling large umbilical hernias. His discussions on surgical subjects have been an added attraction to several of the meetings.

DRS. W. WARNER WATKINS and JOHN WIX THOMAS will be absent from Phoenix for several weeks, beginning the latter part of May. With their families, they expect to make an extensive automobile tour through the eastern states, returning to Phoenix about the middle of July.

DR. I. O. CHURCH has been appointed full-time health officer of Chaves County, N. M., effective June 1. He has been health officer of Topeka, Kansas, for the past two years and was a full-time health officer in Geary County, Kansas, for three years prior to that. Dr. Church is a graduate of Nebraska Wesleyan University and of the Nebraska University College of Medicine, receiving his medical degree in 1920. He is married and has two children.

DR. ROBERT W. CRAIG, of Phoenix, was recently operated for a fulminating appendicitis. Twenty-four hours before operation, Dr. Craig was in his office with no suspicion of illness, yet at operation the appendix was found gangrenous and perforated. He has rallied in a very gratifying manner and is believed to be well on the way to recovery.

The medical profession of Phoenix and Arizona received, with much interest, the recent announce-

ment of the marriage in Phoenix of DR. S. I. BLOOMHARDT and KATHERINE DUNBAR, daughter of Dr. R. W. Craig, all of Phoenix. Dr. and Mrs. Bloomhardt, after a short honeymoon in Northern Arizona, are now at home in Phoenix.

BOOK REVIEWS

Shell Shock and Its Aftermath, by Norman Fenton, Ph. D., Associate Professor of Psychology, Ohio University; formerly at Base Hospital 117. A. E. F. and with the National Committee for Mental Hygiene; author of "Self-Direction and Adjustment;" with an introduction by Thomas W. Salmon, M. D., Professor of Psychiatry, Columbia University; formerly Senior Consultant in Neuropsychiatry, A. E. F., and Medical Director of the National Committee for Mental Hygiene; Illustrated; St. Louis; The C. V. Mosby Company; 1926; \$3.00.

The author tells of the "shell shock" problem in the A. E. F. from first-hand knowledge; he describes Base Hospital 117 and a typical group of the victims. He goes into their social and economic background. Then he presents a study of the war neurotic back home in 1919-1920 and again in 1924-1925, with the interval of five years.

Of the genesis of the neuroses, he says that emotion and instinct are two phases of the same thing. Emotion is subjective and instinct is objective. A man subjected to the terrible stresses and strains of war may have his nervous system affected so that he is mute or so that he constantly cries, or so that he runs or does something else he would not and should not do. If the ideas so engendered are allowed to keep hold of him they are like habits constantly practiced; they become stronger. The time to teach a naughty child not to be naughty is when he first begins to be naughty. So, when a person has a neurosis of any type, the time to cure him of his affliction is early in the development of the neurosis.

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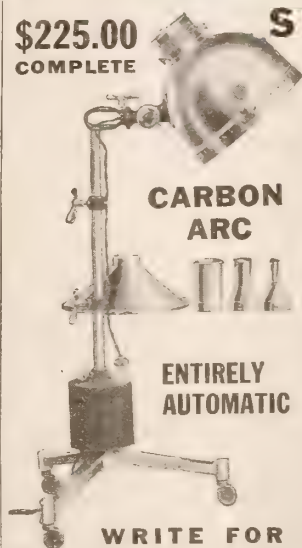
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JUNE, 1927

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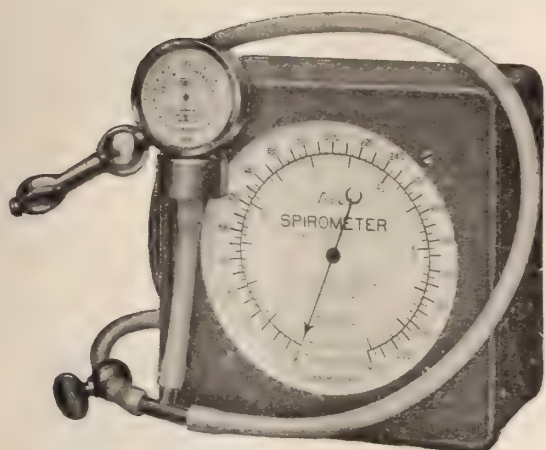
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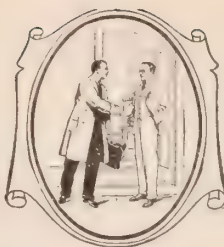
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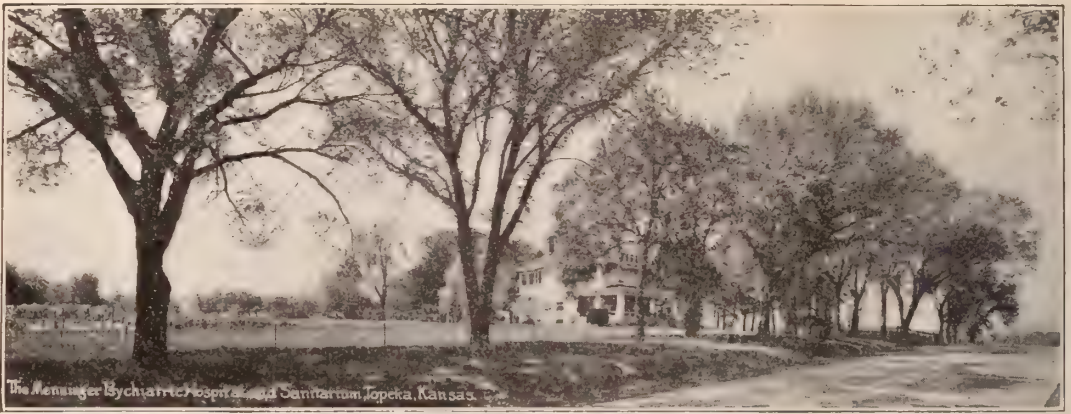


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THE USE AND ABUSE OF IODINE IN THE TREATMENT OF GOITER

A. B. COOKE, M. D.
Los Angeles, California

Read before the Thirty-sixth Annual Meeting of the Arizona State Medical Association held at Yuma, Arizona, April 21 to 23, 1927.

In some one of his books or papers, Crile poetically says that the thyroid gland is the musical instrument upon which nature plays the tune of life. In the same fanciful vein it may be said that iodine determines the key and pitch of the tune—whether it shall be one of sustained harmony or one of discordant jazz.

Long before there was any real knowledge, or even suspicion, of their true relationship, iodine was used empirically in the treatment of goiter; and, with all the broadened understanding of this scientific age, it must be admitted that empiricism on the subject still flourishes to a most regrettable degree.

That iodine has a place, and an important place, in the treatment of goiter, is one of the established truths of modern therapy. But its indiscriminate use constitutes a distinct and growing menace. In reality it is a two-edged sword, as patent for harm as for good. To employ the agent merely because there is a goiter to be treated, is often woefully to misuse a valuable remedy, with serious and sometimes disastrous results to a trusting patient.

It is not the purpose at this time to inquire into the chemistry of the thyroid secretion or to theorize as to how and why iodine operates as its essential ingredient. Accepting the conclusions of the laboratory as well-proved facts, let us try to understand the practical phases of the subject, to the end that we may employ the remedy intelligently, with a definite idea of what we seek and expect to accomplish when we do employ it.

Iodine is not indicated in all goiters. With the single important exception of its use as a preventive in childhood, the only indica-

tion for the exhibition of iodine is hypertrophy or hyperplasia of the thyroid tissue. This condition is found in non-toxic, as well as in toxic, goiters. But not every increase in size of the thyroid gland is due to hyperplasia. Very often the accumulation of colloid, representing the so-called "resting stage" of the gland, accounts for the simple hypertrophy which results in visible enlargement. Here there is no decrease in the iodine content, as may readily be demonstrated in the laboratory, and to exhibit the agent in such a case is nothing short of malpractice. This applies particularly to the quiescent or non-toxic adenomatous goiters in which the administration of iodine, even in minute quantities, is apt to excite active symptoms.

THE USE OF IODINE

First.—As a preventive. Since the brilliant and conclusive work of Marine in certain goitrous sections of the Great Lakes district, it has been accepted universally that endemic goiter is due to iodine deficiency. Perhaps the term universally accepted is somewhat too inclusive, for McCarrison, in the British Medical Journal for January, 1927, asserts that iodine has nothing to do with the causation of endemic goiter, but that it is due to sundry impurities in the drinking water. In passing, it may be said that this rather strange opinion has no support so far as it applies to the goitrous regions of the United States. Marine's observations have been too often and too completely corroborated by other investigators for the question even to be raised. It is interesting to recall in this connection that, some twenty years ago, the elder Kocher stated as his definite conclusion that the prevalence of goiter in Switzerland was due to something **not** in the melted-snow drinking water.

The prevention of endemic goiter has become the much simplified problem of iodine medication of the school children in the affected zones. The amount required is small and the administration simple, the remedy being given at intervals in the drinking-

water or food, without the knowledge of those taking it.

Second.—In the treatment of simple goiter. The one type of non-toxic goiter which is benefited by iodine, is the simple hypertrophy of puberty and early adolescence in which enlargement of the gland is merely an expression of nature's effort to elaborate a supply adequate to the system's increased needs. This is the only form of goiter which is capable of being really cured by iodine, though the majority of cases will get well of themselves if left to the ministrations of time alone.

It has been one of the keenest pleasures of my experience to be able to reassure anxious mothers by advising that their young daughters did not require operation, and to watch the deforming goiters melt away under iodine therapy. Since the advent of the iodine treatment, I have not found it necessary to operate on a single patient below eighteen years of age, and on only a few below the age of twenty.

Of course toxic goiter may, and does, occur at a very early age, so that no inviolable rule on the subject can be laid down. But, in justice to our patients and to ourselves, we should be extremely slow to suggest surgery in any goiter at this period of life.

The goiters not infrequently found associated with hypothyroidism also sometimes respond quite favorably to iodine medication. Here, however, thyroxin or thyroid extract is far preferable, because iodine deficiency alone can not be charged with the myxedematous condition.

Third—In the treatment of toxic goiter. In a paper so logical in its reasoning and so forceful in its expression that it can not fail to impress the average reader in spite of any convictions he may hold upon the subject, Graham* argues that there is no essential difference between the hypothyroidism of toxic adenoma and that of exophthalmic goiter, and that beneficial effect follows the judicious exhibition of iodine in both conditions equally. With the first conclusion, i. e., as to the identity of the hyperthyroidism in the two conditions, I am entirely in accord. But I am profoundly convinced that in the case of exophthalmic goiter there is something other and more to be reckoned with than mere hyperthyroidism. The nature of this something and its method of action, while obscure, are at least suggested by one uniform etiologic feature which is common to all cases of Grave's disease; namely, emotional stress.

The dysfunction is of sudden onset and the characteristic changes occur rather abruptly in thyroids previously perfectly normal.

It is easy to argue on the subject from the viewpoint of the laboratory, building plausible theories on hypothesis and conjecture. But the clinician knows that the greatest aid available to him in solving obscure problems of disease often comes from careful consideration of etiology. The importance of emotional disturbance as a causative factor in exophthalmic goiter can not be ignored or minimized. And it is not difficult to understand that such involvement of the nervous system should so modify the clinical expression of the hyperthyroidism as to justify its being classed as a separate disease.

When Graham states, as the first of his seven conclusions, that "we have been unable to recognize a single symptom or sign that is necessarily pathognomonic for exophthalmic goiter as opposed to toxic adenoma," he refuses to recognize the sign from which the former derives its very name. Toxic adenoma does not cause exophthalmos.

Whether iodine, known to be of the greatest value in Grave's disease, is really of value in toxic adenoma, is another question which the clinician must decide. If we agree that the over-activity of the gland which produces the hyperthyroidism is due to lack of iodine, it would seem logical to conclude that the administration of the agent should be beneficial. But the fact is that in many instances it undoubtedly aggravates the symptoms.

It has long seemed to the writer that the most radical explanation of this apparently erratic action of iodine may be found in the fact that a greater or less degree of hyperplasia is practically always associated with toxic adenoma. It is conceivable that in certain cases the hyperplasia predominates to such an extent that the characteristically favorable response of this tissue to the iodine therapy accounts for the improvement in symptoms, while in other cases, where the adenomatous element predominates, an unfavorable reaction is seen. And the latter class is certainly much the larger. A wise working rule, then, is to observe the strictest caution in the use of iodine in all cases of toxic adenoma. If the doses are small and the case is carefully watched, the remedy may be withdrawn upon the first appearance of any increase in toxicity before real harm is done.

In the light of the foregoing, it is obvious that accurate differential diagnosis is of

the utmost importance before prescribing iodine in any case of toxic goiter. Ordinarily this is not difficult, particularly if the clinical picture has not already been modified and confused by the taking of the remedy. Unfortunately, information, or rather misinformation, on the subject has been so widely disseminated through the public press and other channels that no patient with a goiter long escapes the iodine danger. And, sad to say, when medical advice is sought there is an even chance that the same danger will be encountered.

There are certain fundamental points which must be kept constantly in mind in the treatment of toxic goiter with iodine:

(1) It has no power to cure the disease. In properly selected cases the improvement is so immediate and decided as to seem truly magical, but it is always temporary.

(2) Iodine is contraindicated in clearly diagnosed cases of toxic adenoma. In doubtful cases it may serve as an aid to diagnosis, but should be employed with the greatest caution.

(3) The favorable action of iodine may be expected to reach its acme in about two weeks; to be maintained for a similar period; and then gradually to lose its effect, with a return of the toxic symptoms.

(4) It is most important to remember that one course of the iodine medication seems to establish a tolerance and that the patient usually can not be brought under its control again.

(5) Since iodine is not curative, and since its beneficial action is only temporary, it should be definitely understood, when the agent is employed in toxic goiter, that the purpose is to prepare the patient for safe surgery. In other words, it merely does away with the necessity of preliminary ligations and other makeshift expedients (e. g., x-ray treatment) which were formerly so often resorted to in desperate cases.

THE ABUSE OF IODINE

The more conspicuous abuses and dangers may be grouped under three headings:

Frist.—Failure to recognize the indications for the remedy and to realize its clear cut limitations.

Second.—The tendency to regard it as a curative agent in the treatment of toxic cases.

Third.—The commercial exploitation of iodine, e. g., iodized salt.

The first two have received attention already and are mentioned again simply for emphasis. But the last calls for an additional word. Iodized salt, or rather its com-

mercial exploitation, has become a very real menace. The tendency to self-medication is prevalent to an alarming extent, and the tendency is certainly not discouraged by the modern hodge-podge drug stores with their counter-prescribing clerks of both sexes. Practically every goiter patient that comes into my hands has tried a round of iodized salt or some other iodine preparation, not because it was indicated in the particular case, but because some one had told him that iodine "was good for goiter."

Very recently a young woman from Chicago, who was visiting in my home, complacently informed me that she used nothing but iodized salt on her table. I had known her since her early childhood and was sure that she had never had a sign or symptom of goiter. In reply to my question as to why she used it, she replied, "Oh, so I will not develop goiter."

Personally I have no doubt that the notable increase of recent years in disease of the thyroid gland among the adult population is largely due to this evil. Many individuals undoubtedly have small adenomata which would remain permanently latent and symptomless if it were not for the misuse of iodized salt and other iodine preparations with which a sophisticated public has become sadly too familiar. And this conclusion gains weight when the frequency with which goiter in men is encountered at the present time, is considered.

The use of iodine has contributed much to the solution of the goiter problem. Intelligence and due care will eliminate the abuses.

INTANGIBLE THYROID RELATIONSHIPS

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Read before the Thirty-sixth Annual Meeting of the Arizona State Medical Association held at Yuma, Arizona, April 21 to 23, 1927.

A few days ago I heard somebody bemoaning the fact that we have only one gland-function test—the metabolic rate for the thyroid. He inferred, and then went on to explain in detail, that if we could only test all other glandular activity as we do that of the thyroid, we should be in a much better diagnostic and therapeutic position. A moment later he ingenuously and freely admitted that the determination of metabolic rate measures only a part of thyroid activity.

I believe I am rather glad that there are no other real laboratory tests of gland activity, because we are therefore and thereby forced to think in a philosophic way

about gland functions, and not content ourselves with the half truths revealed by test-tube and reagent. Anything that will tickle our medical mentalities into philosophic activity is worth retaining and developing.

The thyroid metabolic test is quite parallel, in the glandular realm, to the psychometric or intelligence test used by psychologists in estimating mental capacity. Though we had just as accurate tests for all other glands as the basal metabolic rate is for thyroid activity, yet, all of them taken together could be of little greater value than are the various modifications of the Binet intelligence test when it comes to determining the total personality of an individual.

The difficulty in all so-called "exact" methods of testing mentality, lies in the fact that the mind is not a single, simple, unattached entity, but is a complex and inseparable part of the total human personality. In like manner, all possible tests of gland activity can, in the very nature of things, give but a fragmentary and, therefore, inadequate and incorrect idea of what part the glands of our bodies are constantly playing in carrying on life processes and giving us our personality.

So I repeat, it is well that we have no so-called "specific" tests for glandular activity because, having none, our minds are not fettered to semi-facts and fragmentary evidence, and are thus enabled to make deductions and form conclusions freely, on the basis of total nervo-glandular personality rather than laboratory minutiae. We analyze and synthesize general reactions rather than bits of incidental biochemistry.

I have just made use of a rather curious, complex name; i. e., total nervo-glandular personality. This term requires definition or, at least, explanation. It is expressive of the rapidly increasing realization by both clinician and physiologist that each glandular function is inextricably tangled with the others; and also that the activity of all glands, both singly and collectively, is largely correlated and governed by the nervous system. Nerves and glands must always be considered together in future medical thought and research. Their combined influence is great enough to warrant the statement that human personality is largely the result of nerve and gland activity. Hence, it is allowable to coin the term "total nervo-glandular personality."

If it is granted that human personality develops largely, or entirely, from nervo-glandular activity, then it is necessary to go a step farther back and determine what is the ultimate source of that stimulus

which causes personality to develop. What sets the whole complex, sequential human mechanism going; what constantly moulds the physical body, and the mental body, and the emotional personality so that they develop and retain their proper and natural forms? To the inquirer who proceeds unhampered by the strictures of mysticism, tradition or trespassing theological preconceptions, there is but one answer to the single question just now stated in three differing forms—the sex or reproductive glands.

It must be true that there is a central, dominating organ or area from which all somatic activities are moulded and directed, the physical counterpart of the central dominating area where mental activities are moulded and directed.

The brain is the area of mental moulding and direction. The sex glands seem to perform the same function for the physical personality. Neither area is simple and complete in itself. Each must depend on a multitude of agents to carry out its commands. It is necessary to proceed a step further and say that each of these areas, i. e., the brain and the sex glands, is quite dependent on the other for full and normal activity.

Human personality is distinctly bisexed—it is male and female. Male personality can become and remain male, and female become and remain female, only through the activity of a dominating and physiologically irresistible force. That force comes from the sex glands. It acts upon every part and portion of the body, to masculinize or feminize as the case may be. It furnishes to every other gland in the body the primary stimulus to secretory activity.

The predominating position of the sex glands in creating physical and physiological personality has long been known, but the concept of their great role in moulding the less tangible qualities of general human personality is not so clear in our minds. The reflex relationship which exists between the total personality of the human individual and the functional condition of the body, is not only not understood but its very existence is too seldom taken into account when etiology is being studied.

This may be stated another way for the sake of clearness, viz: The personal make-up of a man or a woman is able to reflexly modify various functions of the body.

A familiar and simple example of this reflex modifying ability of the human personality is seen in the effect of bad news suddenly received. Some people are physio-

logically undisturbed by emotional shocks such as the receipt of a telegram containing bad news. Others are so upset physiologically that they are unable to digest food or even to finish a meal already begun.

The general argument presented by this paper is, that the emotional level of human personality is a distinct and, frequently, a preponderating influence in determining the functional activity of human organs and glands.

The specific argument is that thyroid activity is frequently so disturbed by long-continued worries and stresses that definite thyroid symptomatology develops which may easily be mistaken for primary thyroid disease.

This leads unerringly to the conclusion that any and all treatment of such thyroid disturbance will inevitably fail if its personality origin is not recognized.

It would be interesting to construct a new classification of thyroid manifestations on this basis, but the scope of this paper forbids. One thing would appear as soon as such a classification came into general use; viz, the application of surgical procedures to thyroid problems would become much less frequent because personality etiology would be recognized early enough to prevent surgical thyroid conditions from developing.

A concrete case will be illustrative of this thyro-personality relationship. A thirty-three year old unmarried woman complains of paroxysmal tachycardia, depression and occasional exhaustion. Her pulse rate goes up to 120 or 130 without apparent reason, and it remains at that rate for from one to four days, then quickly or gradually returns to a normal rate. She feels mentally and physically weak and effortless during, before or after such spells of rapid heart action. She has feelings of unworthiness and inadequacy. A fine tremor of hands is irregularly present in connection with the tachycardia.

She is well educated and of attractive presence.

The working diagnosis in this case is symptomatic depression originating in long-continued emotional stresses, and paroxysmal tachycardia due to psychogenically irritated thyroid.

Further etiological history. Patient was born of religious parentage. Received only the repressed type of unconscious sex training from mother during her babyhood. Received no uninhibited sex information from parents in childhood and young girlhood; received no warning concerning menstruation. She was so repressed by the time she

matured that the whole subject of sex was taboo even to thought. She became sex-conscious and began to masturbate. Masturbation produced self-abasement and feelings of inferiority. These, later, prevented her from freely associating and becoming married.

She changed occupation at twenty-three because of restlessness. The restlessness was due to lack of satisfaction with life as she was having to live it, and to lack of expectation of future contentment.

This patient is extremely intelligent and ready to cooperate, thus making it possible actually to reconstruct the progress of her disabling psychosis from the beginning of her ability to register things in memory. It would be very interesting and profitable to minutely trace this progress, but time does not permit. Enough has been related to show that a girl who was endowed with a good mind and a vivid imagination came up to the marriage period so repressed and obsessed that she could not accomplish a union. As she approached thirty she gradually became conscious that her failure to to minutely trace this progress, but time become biologically complete, i. e., to marry and bear children, was due to inhibitions within herself. She could not break them. They broke her.

Another most interesting matter might be discussed just here, the question of just what role the inherited biochemical make-up of the ovaries played in producing this patient's inhibitions and obsessions. The ultimate origin of the simplest and most primitive sex ideas is doubtless the biochemical and biophysical activity of the reproductive system. Possibly the inherited constitution of this patient's reproductive system was in large part responsible for her inability to acquire reasonable sex education in the first place.

The net result of all this unfortunate tangle of personality difficulties was that her thwarted emotional self turned in on her physiological self and caused havoc. Her paroxysmal tachycardia was due directly to the occasional reflection of her despair on her thyroid glandular activity. It could do this only after the patient had been, for years and years, subject to the constant irritation of unsatisfied desire for motherhood.

If this tachycardia had happened to be constant rather than paroxysmal, then this patient might have been subjected to long rest cures, or artery ligations, or thyroidectomies, with no benefit.

On the other hand, if the psychogenesis of her rapid pulse rate had been looked in-

to and understood at the time of its first development, it might have been removed early enough to prevent the suffering and disability present when she came under my care.

CONCLUSIONS

1. Thyroid disturbances are frequently due to emotional causes.
2. Inferentially, other gland disturbances are also due to psychic or emotional causes.
3. Treatment directed at the local thyroid condition, without regard to its psychic or emotional causation, will fail and continue to fail.
4. At the present stage of our knowledge concerning the causation of hyper- or dis-thyroidism, many surgical procedures are necessary, because thyroid tissue has become organically diseased by reason of long-continued psychogenic irritation.
5. In the future there will be much less thyroid surgery because the emotional or personality causes of thyroid mal-function will be recognized early enough to prevent the development of organic pathology.
6. Future medical philosophers will gradually untangle glandular and emotional relationships until it is seen that the emotional level of human personality has very much to do with both normal and pathological glandular activity.

DISCUSSION

DR. WILLARD SMITH, Phoenix, Ariz., (opening): If this meeting continues to produce papers of this sort, it will be a valuable meeting. I do not know whether Drs. Cooke and Moore collaborated in this matter or not, but it seems to me that each one has builded an approach to a bridge. Drs. Cooke from the purely materialistic view point has given us a paper which is incontestable and leaves nothing to argue about; it is historically correct and a very timely warning. Dr. Moore has builded an approach to the other end of the bridge leading to what we doctors must eventually learn. I wonder how many of you have read Andrew D. White's "Conflict Between Science and Theology in Christendom." If you have not, you should read it, because it is an accurate account by a truly historical genius. He discusses the advance of science into the vague realm of theology and shows how every advance was vigorously opposed because it took away the livelihood of the priestly cult. When they would feel their feet slipping, they would endeavor to compromise. Lastly, when no longer able to resist the truth, they would pat the scientist on the back and call him a good fellow and say, "we knew that all the time but the people were not ready to receive it." And the doctors were a part of the people, maybe a little less intelligent than the regular mass, because we depend upon them for our bread and butter and toady to them. Whenever the time comes that we are able to grasp, in its implications and its literal practical application, what Dr. Moore has told us this morning, we will be ready to begin to be true physicians. Dr. W. W. Keen once said that the stethoscope and microscope had destroyed the clinician, and it is true. We have some reason to believe that in some ways we are dissipating, or watching the abatement of, the fog. As a matter of fact,

we do not know anything yet about our complex system of ductless glands. There has been a vast amount of detail investigation, but we have not figured out the entire relationship. Dimly through the fog the idea is beginning to emerge that there is a mainspring. These other things are a chain of gears actuated by the mainspring, and upon their accurate relationship depends the eventual physiologic and sociologic manifestations of life. The mainspring is exactly to what Dr. Moore has called our attention. He let me read his paper before the meeting, and it made me think of something. Not so long ago, a female patient came under my observation. I diagnosed her trouble as thyroid disease and operated upon her; she did not get any better; eventually it dawned on me that all she needed was warming up and I contrived to steer her into a set of circumstances in which she lost that most invaluable relic upon which the priesthood has fattened,—the maidenhead,—and discovered like a stroke of lightning the cause of her thyroid trouble. Since that time she has been totally unmoral,—I do not say immoral, having been in the South Seas too much,—and has become a happy and healthy woman. The drag of superstition and religion is so strong that it bothers her some. A few days ago I had a patient with breast amputation who developed fever that I did not understand, as there was no evidence of infection. I found out a few days later that a niece of hers had been urged so by her school to get a passing grade in,—what do you suppose the subject was? We pay taxes to hire school teachers and this poor girl was made to try again and again to get a passing grade in the standing high jump! In her final effort she broke her leg and that explained the fever in my patient. As a people, we are not ready to accept what Dr. Moore was telling. In dealing with mechanical experiments, we have learned a few things, but have not gotten to the point where we can face the human problems definitely and openly, as the Creator made us. When we do, we will add to our laboratory of chemistry and laboratories of various other things, a laboratory of sexual technic for our high school pupils. When we tear away the veil of superstition and send the priesthood to the Gehenna it deserves, then, and not till then, will Dr. Moore's ideas come into their own.

DR. A. B. COOKE, Los Angeles, (closing): There is little that I can say on Dr. Moore's paper—which seems to be the chief theme of discussion. If he had taken me to one side and let me study the paper beforehand, I might be able to discuss it. I have no question but that Dr. Moore's line of thought, as it develops in the coming years, will be the correct line of approach for our resatches into glandular activity. Unless we take this into consideration and practice it more or less in the treatment of every case that comes to our hands, we cannot do fair justice to the patient. As some of my old teachers used to say, "remember you are treating a patient and not a disease." That is a homely way of expressing what Dr. Moore has said, though he went much more deeply into it than I can.

With regard to the case quoted by Dr. Smith, I hesitate to talk about it, but wish to say this; he operated this patient and secured no result, did no good; afterwards the establishment of certain unmentionable relations effected a cure. I very much question the correctness of that statement, and it should not pass unchallenged in a body like this, because we know, and Dr. Smith knows, that we do not always get immediate results following a thyroidectomy, however successfully done. It is sometimes weeks or months before the correction of glandular activity is secured. He also knows that sometimes surgeons make mistakes in operative work; the mechanism of surgery is nearly perfect, but we make errors in judgment and may not take

enough gland to get results. Sometimes we take out more than is necessary and have to give drugs for correction of the symptoms. I do not believe that he has sufficient basis for the statement that the suggestion made to the patient is to be given credit for the cure in the case. The facts are not complete enough; if he had assured us that he took out all of the gland except a small piece, just enough to keep up the maintenance of secretion, then he would have laid some foundation for the opinion that this other thing is true. I do not believe in his suggestion that we should establish a school of sexual technic for children. I have not gotten along quite that far in social development. There has been established in me so deeply a belief in the correctness of the teachings of morality that I cannot listen to that statement, without taking issue with it.

DR. ROSS MOORE, Los Angeles, (closing): There is much that I might say in closing this discussion. Dr. Cooke and I did not collaborate in writing these papers, except to the extent of telling each other our subjects..

Fourteen years ago I attended an Arizona Medical Society meeting in Globe, where I read a paper on poliomyelitis. At that time we knew very little about the causation of poliomyelitis. If I were to speak to you now on that subject, I could present it much more intelligently because of progress made in understanding it since that time. We are in very much the same situation today regarding thyroid disease as we were fourteen years ago with reference to poliomyelitis. Our knowledge of basic thyroid etiology will develop during the next fourteen years much as our knowledge of poliomyelitis has developed during the last fourteen.

When I had been a year or so in practice, I ran across a poem, of which only one line now remains in memory, "Tis not the body but the mind is ill." This has been a guiding star to me. I wish I could express clearly to you my ideas of the ultimate basis of thought and the emotional life. Thought and motion are products of physiological activity. There is no mystery about them. They are not soul products, they are body products. If we will dissociate the idea of human personality from the soul idea and say to ourselves, "the soul, if there is a soul, comes into the body from outside it and is therefore not an essential part of it," then we have provided ourselves with a point of departure from which the questions of morals, religion, sex, etc., can be solved. The question of sex is not a soul question. It is a body question. Sex difficulties exist purely because a million or so years ago the family group became the accepted unit for human society. A male animal and a female animal were placed together as man and wife and these two were made to live together and with no one else. This was quite contrary to many milleniums of human animal heredity. Our natural inborn animal heredity has not yet become moulded into that new form which we call the single standard of morality. Thereby hangs the tale of repressions and conflicts and functional illnesses which are the bane of twentieth century human existence.

The thing I want to show in this paper is that certain thyroid disturbances can come directly from emotional conflicts and stresses, in susceptible individuals. They are the remote result of improper training or lack of training, and the direct result of non-satisfaction. This statement may not be clear. I am trying to say that certain thyroid conditions are definitely and distinctly the result of psychogenic factors involving the most personal part of the human organism,—the reproductive system. Any treatment of such thyroid conditions will fail, unless and until the warped and twisted reproductive urge responsible for it, is properly valued and treated.

Dr. Cooke's paper is extraordinarily helpful in

pointing the way to the proper handling of fully developed thyroid disease.

My paper is designed to contribute an item or two to the understanding of ailing or repressed patients of today, in order that they may be prevented from becoming the thyroid patients of the future.

INDICATIONS AND CONTRA-INDICATIONS FOR CESARIAN SECTION

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Definition:—The removal of the child from the uterus through an incision in the abdominal wall, is cesarian section.

INDICATIONS

I. Pelvic Contractions.

Indications may be either absolute or relative.

Absolute. All agree, regardless of condition of mother and fetus, that, in a contracted pelvis with a conjugate vera of 5 cm. (two inches), cesarian section is indicated.

Relative. A pelvis with a conjugate vera of 5 to 7.5 cm. (two to three inches) is an absolute indication with some authorities, relative according to others; that is, if the mother and fetus are in good condition. If the fetus is dead or the mother infected, cesarian should not be done.

Relative. Flat pelvis with measurement 7.5 to 8.5 cm., or a generally contracted pelvis with diameter of 7.5 to 9 cm. A study of the case during the last month of pregnancy must decide, as several factors enter in. (a) The size of the head, and whether it fits into the pelvis; whether it is preferable to induce labor at eight and a half months; whether lower point of head can be brought to the lower margin of symphysis; whether there are pelvic tumors which might interfere (examine with half hand and anesthetic, if necessary); if patient is multipara and in this class and has had previous disasters. (b) Probable character of labor: if patient is rachitic and pelvis flat, labor is apt to be normal; in patients with generally contracted pelvis, labor is apt to be weak and uterine muscle flabby; history of irregular and painful menses may mean weak, infantile uterus; sometimes a few hours trial of labor may be advisable. (c) Dilatability of cervix; membranes rupturing early may furnish indication for cesarian; follow the course in the early hours of labor by rectal examinations, in borderline cases; when pains are irregular and weak in borderline cases, cesarian should usually be done. (d) The moulding power of the head as felt through the cervix: if the fontanelles are large and the bones soft, labor may proceed; if not, cesarian may be indicated. (e) The prob-

able effect on the patient of a hard labor is a factor in borderline cases: if there is heart disease, in a certain nervous type of patient that can hardly stand the ordinary buffets of life; if there is mitral stenosis or aortic regurgitation, or recent signs of decompensation; all may alter the indications.

Relative. A conjugate vera of 9 cm. or more seldom calls for cesarian unless the child is too large. The important thing is the comparison of the size of the child with the size of the pelvis, and not simply the measurements in themselves. In primipara, a face or transverse presentation in this class would favor cesarian.

Contraction of Outlet. This is the most common type of deformity in women in the United States. A transverse diameter of 7 cm., or less, is generally considered an indication for cesarian. If, however, there is a corresponding lengthening of the posterior sagittal or bi-ischial diameter, this may not be so. Here, again, it is the size of the head in proportion to the outlet that is the main thing; after a few hours of labor, if the head can be pushed down to the pelvic floor (i. e., past the ischial spines) there is no need to worry. A persistent occiput posterior in this class would favor cesarian.

Rarer Conditions of Contraction. (1) Kyphosis of lumbo-sacral spine. (2) Spondylolisthetic pelvis, if conjugate vera is 9 cm. or under, calls for cesarian. (3) Hip disease of childhood, in which the well leg pushes the pelvis upward, inward and backward, causing an obliquely contracted pelvis; measurements are of no help here; examine under an anesthetic and, if delivery seems improbable, cesarian should be done. (4) Obliquely contracted or Nagele pelvis; ordinary measurements of no help and there is no limp; one ilium will be higher than the other and scoliosis will be present; caused by lack of development of, or even absence of, sacral ala on one side. (5) If the sacral alae are affected on both sides a transversely contracted pelvis (Robert) results and cesarian is indicated. (6) Osteomalacia is an absolute indication. (7) Exostoses of the bony wall of the pelvis, as well as tumors of the pelvis are indication for cesarian.

II. Non-Pelvic Conditions.

Tumors and Disease of Uterus and Other Pelvic Organs. In fibroids with rigid, undilated cervix, after a few hours of labor, with weak pains, etc., cesarian may be required; if the fibroids are in the lower segment or in the cervix, they may offer a real obstruction to the entrance of the head into

the pelvis. In carcinoma of the cervix, do cesarian and treat the carcinoma as soon as recognized, regardless of the length of term. In ovarian tumor, remove as soon as recognized unless in the last month, when it is permissible to wait and do an elective cesarian, with removal of tumor at the same time. If belly must be opened for removal of tumor, it is reasonable that patient can stand this better with an elective cesarian than she can after a more or less exhausting labor. Among other less common conditions which may offer indications for cesarian, are: prolapsed kidney or spleen (normal or enlarged); echinococcus cyst; tumor or bladder or bladder stones; tumors of rectum or pelvic connective tissue. Cicatricial stenosis of cervix or any part of the birth canal may prove to be so unyielding as to make delivery impossible and cesarian after trial by labor may best be done; this would apply also to repair work in multipara with history of previous hard labors.

Uterine Displacements. If the pregnancy goes to full term, can usually relieve by dilatation and version, but cesarian may be the best course, especially if the cervix is turned upward and is not accessible.

Age. If patient is over forty and a primipara cesarian is advisable, because the soft parts will be unyielding: she will probably never be pregnant again and a hard labor will be more dangerous to the child than cesarian. If the pelvis is slightly contracted, the indication becomes absolute.

III. Possible Indications.

In the following conditions cesarian section offers the easy and quick way to save the child, if this is of paramount importance.

Toxemias of Pregnancy and Eclampsia. Severe toxemias occur most often in primiparae in whom induction of labor and pelvic delivery is apt to be prolonged and difficult. In this type of case, cesarian may offer the best way out, especially if patient is over thirty-five years of age. If the cervical canal is obliterated and external os is soft and dilatable, then accouchement force is indicated, because it would permit normal labors in the future.

Placenta Previa. The majority of these cases are best treated by Braxton-Hicks version or large dilating bag. If it occurs in primiparae, (as it seldom does) with hard cervix, etc., cesarian may be best. The cervix is generally soft with placenta previa.

Cardiac Complications. Mitral stenosis and aortic regurgitation, especially if there

has ever been decompensation, are bad risks in labor. If compensation is good and easy labor expected, do not do cesarian; if reverse is true, cesarian is preferable. Same rule applies to myocarditis.

Nervous Conditions. Certain nervous types and certain types of poor physical development may do better with cesarian than with a long hard labor. If pelvic delivery is endured, patient may be left in condition which will require months for recovery.

Repairs. Cesarian section to prevent pelvic damage following repair of previous injury, may be indicated; it will depend on the amount of previous damage and how much ill health it caused, etc. It is easy to see that a tear into the rectum may be worse than a cesarian.

Malposition of Fetus. This is not a cause per se, but if pelvic contraction or disproportion exists, it may be an indication, as mentioned before.

Postmortem Cesarian. Living children have been delivered up to one hour after the death of the mother.

CONTRA INDICATIONS TO CESARIAN

1. Uterus infection is an absolute contra-indication to cesarian, unless the operation includes the removal of the uterus. Gonorrheal infection is one type. Repeated vaginal examinations are potential infection cases.

2. Where the membranes have been ruptured a long time.

3. Previous attempts at pelvic delivery with forceps. It is better to do a destructive operation on the child, especially if already dead.

4. Exhaustion—either extreme general exhaustion, or uterine muscle exhaustion—may greatly increase the danger of cesarian and present a contra-indication.

5. Intercurrent disease which has greatly lowered the patient's resistance and vitality, may be a contra-indication, especially if general anesthetic is to be used.

6. Cesarian should never be done except in a first-class hospital.

DISCUSSION

DR. J. M. GREER—Relative to the conditions in which there are indications and contra-indications for cesarian section there are a few points which I wish to emphasize.

I had the pleasure of hearing this subject discussed by Professor Williams, of Johns Hopkins, last summer at the University of California and it was his opinion, as is the opinion of many other conservative obstetrical surgeons, that there are far too many sections done at the present time. Dr. Williams showed many lantern slides of individuals with deformed pelvis that were delivered spontaneously. It seems that modern surgery has made this operation too easy and safe for general surgeons to resist, and it has also been said that

the modern women at times add a tempting appeal to their vulnerable judgment.

Let me review again the indications:

1. **Absolute.** No question of choice.

1. Conjugate of less than 7 cm. or with other measurements so small that delivery could be accomplished in no other way.

2. Complete obstruction of pelvic canal by tumor, fibroid, cyst, osteoma of sacrum.

3. Gigantic child, anterior parietal eminence projects well beyond symphysis.

11. **Relative** A choice of methods, but section offers greatest safety for both mother and child.

1. Moderately contracted pelvis in which one or more previous labors have ended disastrously for the child.

2. Arrest of head in upper third of birth canal after a satisfactory test of labor.

3. Breech presentation in an elderly primipara

4. Placenta previa in a primipara.

5. Moderate hydrocephalus.

6. Impacted shoulder, face or brow presentation; live child where a version would be dangerous.

7. Eclampsia—non-dilated or non-dilatable cervix or if a version would be difficult.

Remember that 80 per cent of labors in the borderline contracted pelvic type terminate spontaneously. No borderline case should be condemned to section without a test of labor.

As to Contra-Indications—First, owing to the unexpected easy deliveries which are commonly seen in primigravidae with simple flat pelvis, it is unwise to recommend section until the progress of descent has been watched during the early stages of labor.

The objection to terminating a "trial labor" by cesarian section is the danger of infection, but this is no greater than when the operation is done before labor, provided no vaginal examinations have been made or the membranes ruptured for more than about two hours.

The "failed forceps" case.—Should we or should we not perform cesarian section? If the child is still alive this is one of the most difficult problems in obstetrics. The chief risk is sepsis; either of the peritoneum, uterine or abdominal walls. The lesser risk is shock. There are two extreme views. First, never perform section after vaginal examination has been made with ruptured membranes. Second, performing section after repeated attempts at forceps delivery under questionable or unknown conditions. It would seem that a medium line of action would save some babies without undue risk to the mother.

Grouping these cases into clinical types:

1. The exhausted woman with certainty of infection, as shown by an offensive discharge, history of multiple attempts at forceps delivery in dirty surroundings. Of course, in this type of case section is contra-indicated and craniotomy is the treatment.

2. A woman in good general condition has had forceps delivery attempted under clean surgical surroundings with aseptic and antiseptic care. The fetal heart is strong and of normal rate. Section could be performed here, but it must be understood that the risk to the mother is greater than if operation had been done before attempts at delivery. In these cases the technic should be modified.

3. The patient has been in labor long enough to judge whether the head will engage and pass the brim. The membranes have not been ruptured more than about four hours, and only the most careful vaginal examination has been made. This is really a case of "trial labor" and section may be done with very little added risk.

Blacker has shown that when cesarian section is done after failure with forceps, only 50 per cent of the children leave the hospital alive. You see this is a heavy mortality and in these cases we are not justified in putting the mother to a very great additional risk when the babe's chances are only 50 per cent.

CONDITIONS IN WHICH THERE ARE INDICATIONS AND CONTRA-INDICATIONS FOR THE USE OF FORCEPS

ROBERT W. EATON, M. D.
Phoenix, Arizona.

The demands of the laboring mother for aid, the anxiety of the prospective father and the desire of the doctor to finish the case up a few hours before the natural termination, are not indications for the use of forceps. Especially in hospital practice, the attending physician can drop in at intervals during the progress of the case. Should his presence be needed on short notice, he should be ready to respond. This, in a measure, relieves the physician of the burden of "watchful waiting." Also, in the hospital, the attendance of the nurses and hospital routine tend to pacify the patient, and take the burden off the minds of the anxious relatives. The same anxious relatives, in the home, have a tendency to assume full responsibility and direction of the case; therefore, in the hospitalization of obstetrical cases every point helps the physician to command the situation and follow closely the definitely established rules of indications and contra-indications of operative obstetrics.

Here, in our two "Class A" institutions, we have data for the years 1925 and 1926 showing 771 obstetrical cases with 107 forceps deliveries—about 14 per cent. In one of these hospitals, the records show 341 cases with 30 forceps operations—less than 9 per cent. In the other institution, with 430 cases, we find 77 forceps deliveries—over 17 per cent. Truly, this is a marked variation.

Let us review this situation with an idea that the employment of forceps is undertaken after a definite conclusion that the labor will not terminate spontaneously, or that the condition of the mother or the condition of the child calls for a speeding-up of the birth process. The foundation of this prognosis is based on:

- (1) The pelvic measurements and the relative size of the fetal head;
- (2) The position of the child in cephalic presentations;
- (3) The condition of the child.
- (4) The condition of the mother—exhaustion and pathological conditions;

PELVIC MEASUREMENTS

Measurements at the seventh month may not be favorable, but with pelvic growth and supervised diet, which may tend to keep down the size of the child, at term the situation may appear more favorable. The same doubtful case may deliver normally after having been given the test of labor from twelve to twenty hours.

In review let us consider some of the fundamental pelvic measurements. Externally, we have:

1. Interspinous—26 cms.
2. Intercristal—29 cms.
3. Intertrochanteric—31 cms.
4. The external conjugate, or Baude-locque's, diameter—20 cms., Baudelocque's diameter being 8 cms. larger than the conjugate vera. However, this is subject to variation.

These are fundamental external pelvic measurements and are of value in estimating prognosis of the case.

The internal pelvic measurements are:

1. Average diagonal conjugate—12½ cms.
2. Bispinuous (between spines of ischium)—11 cms.
3. Bi-ischial (between tuberosities of ischium)—11 cms.
4. Sacro-pubic—11½ cms.
5. Conjugate vera is estimated at 11½ cms. less than the diagonal conjugate—the average being 11 cms.

It is impossible in this brief time to mention the various types of contracted pelves, which can be brought out by x-ray examination; but consider those with the contraction at the inlet and those with the contraction at the outlet. In cases of absolutely contracted pelvis with the conjugate vera below six centimeters, and in the relatively contracted pelvis with a conjugate vera between six and eight centimeters, the use of forceps is not practical and the method of procedure is usually decided upon before the onset of labor, if the case has been under the observation of a careful physician.

In the moderately contracted pelvis, with the conjugate vera varying from 7½ to 9 centimeters, the test of labor is warranted, or with the induction of premature labor the patient may be able to deliver unaided. If, in a term labor, the head appears to be molded and about to enter the inlet, the use of forceps is to be considered—truly a high forceps operation with a fetal mortality of 2 to 4 per cent. In slightly contracted pelvis, with a conjugate vera between 9½ to 11 centimeters, a spontaneous delivery is to be expected unless the child is overly large. But, in this type of pelvis, we must

be on the outlook for breech, face, brow, occipito-posterior and other malpositions and errors of attitude.

With pelves constricted at the outlet, the condition may not be discovered until the head has been arrested at this point for some hours. In these cases engagement is the rule and labor usually progresses fairly well during the early part. This condition may be discovered previous to labor, on a very careful examination, and the plan of procedure outlined beforehand. In an advanced labor, with the head well down, the exaggerated lithotomy position is much more favorable and may allow the head to advance further. Forceps deliveries in these cases are usually successful, but at the same time there is considerable damage to the fetal head, laceration of the tissues of the mother and, sometimes, even damage to the pelvic bones. Primipara suffer worst with this anomaly, and there is high fetal mortality.

CEPHALIC PRESENTATIONS

With the various positions of the head in cephalic presentations, the mechanism may be retarded and the maneuvers of rotation and extraction are undertaken with forceps to affect delivery. In the position of L. O. A., there may develop a deep transverse arrest with the fontenals on the same level and the head wedged in between the ischial tuberosities. Another condition in L. O. A. calling for the use of forceps would be the arrest of the head on the perineum, and here delivery is usually quite prompt with the employment of forceps. Another condition for the use of forceps in a normal presentation would be the delayed engagement of the head and the application of the high forceps operation. Other conditions where forceps are frequently employed are the persistent occipital posterior positions. Face and brow presentations must also be considered in forceps operations. For the application of forceps we should have the following conditions: The estimation of the pelvic measurements must be favorable, and the child's head not too large; the cervix must be fully dilated or dilatable, the membranes ruptured, the bladder empty; and the patient should be under a deep degree of anesthesia. The child should be living. If not, the operation of craniotomy is to be considered.

The complications with reference to the fetus, which must be considered in the use of forceps, are: Injuries to the soft tissue, cerebral trauma, cerebral hemorrhages, injuries to the facial nerves, damage or fracture to the bones of the skull.

With the mother we may have various degrees of laceration to the pelvic floor, marked lacerations to the cervix, injuries to the bladder, injuries to the pubis and coccyx, and damage to the nerves of the lumbar and sacral plexuses.

Common causes for failure of forceps delivery are: (1) Failure of rotation in occipital-posterior presentations; (2) contraction rings of the uterus; (3) pelvic tumors; (4) contracted pelvis.

CONDITION OF THE CHILD

The third phase of the forceps situation is the condition of the child during the progress of labor. This is best estimated by periodic examination of the fetal heart tones, which should range between 120 and 140 beats. The increase in rate to 170 or the slowing down to around 90 beats per minute, are danger signs. At the onset of labor, or as the head descends into the true pelvis, the accoucher may detect a fetal souffle and a marked irregularity in rate and rhythm of the heart tones. This may be due to the stretching of a short cord or the cord being around the baby's neck. As labor goes on the heart tones may steady down as the circulation in the cord is readjusted. In prolonged labor with the head on the perineum, with the heart tones weak and unduly rapid or slow, the timely application of forceps may insure a living child. Prolonged pressure on the head and a markedly increased caput, call for the use of forceps. Mechanical difficulties, such as a forelying cord or prolapse of the cord, may be relieved by forceps procedures. However, version and extraction probably has an equal advantage.

CONDITION OF THE MOTHER

The condition of the mother must be observed closely. At the onset of labor, she complains bitterly. The pains are sharp as the cervix is being dilated. The head may remain high and both patient and physician become dubious as to the outcome of labor. However, as time elapses, the cervix has become dilated, the head molded and descended, the patient feels the pressure on the rectum, the bag of waters has ruptured, and we find conditions more favorable for delivery. The patient is now cooperating because she feels encouraged. This period can be eased by the use of hypodermics and encouraging the patient to rest and conserve her energy. Again, when the head is on the perineum for an hour and a half or two hours, and the contractures not forceful, we believe that the use of small doses of pituitrin at 15 minute intervals may be sufficient to carry the case over to normal

delivery. Also, the episiotomy incision may eliminate the use of forceps.

Abnormal or pathological conditions which may be indications for forceps are: eclampsia where the conditions are favorable for the use of forceps; nephritis; dilated heart; diseases of the lungs; conditions of uterine inertia or uterine contractions, such as a Band's ring, and a condition of threatened rupture of the uterus. These are all conditions that call for the use of forceps. In a condition of premature separation of the placenta, the conditions might favor the use of forceps.

The other extreme is that of a woman who has been laboring for 24 to 36 hours, and may be brought to a hospital with a temperature of 99 to 100 degrees. Her pulse is rapid, running from 120 to 130 beats per minute. The pains may be strong or weak, depending upon the tone of the uterine muscles. The vulva is swollen and edematous and a marked bloody discharge from the vagina is present. The fetal heart tones are markedly abnormal or absent. This, in my opinion, is a picture of extreme exhaustion, and is a situation that should have been relieved, many hours previously, by obstetrical art. In these cases we should ever have before us the idea, "Consider not how much the patient can endure, but consider how much she is accomplishing."

It is true that, with indications and contra-indications, there may be a wide variance of opinion as to the proper time for the use of forceps. However, if the physician is fair with the patient and abides by his teachings, the application of forceps will continue to be of great benefit to laboring women.

DISCUSSION

DR. A. J. MCINTYRE: I wish to compliment Dr. Eaton on the paper which he has just presented. The indications and contra-indications for the use of forceps is a big subject, and in my allotted five minutes of discussion it would be impossible for me to thoroughly cover the subject.

First, we will assume that in our two class A institutions, none of our men are using forceps for the express purpose of hastening the termination of labor. There are many opportunities for the physician to apply forceps in order to promote flexion or extension, and, when this has been done, the forceps can be removed and the case will terminate normally. For example:

(1) When external examination indicates that we have a posterior-occipito position, we know that this patient will labor for hours with very little progress. When the cervix is completely dilated by the use of and proper application of the Kielland forceps, the head can be rotated very easily to an anteroposterior position. As the Kielland forceps tend to promote flexion, the head can be started in the superior strait. The forceps can then be removed and the case will terminate normally.

(2) There are a few cases in which the cephalic pole will rest on the pubic bone in front, or on the

ascending rami of the pubis, and the contractions of the uterus are such that the baby's head will not flex. In this case, the use of the Kielland forceps to promote flexion will immediately be followed by descent. After descent is noticed, the forceps can be removed and the case will terminate normally.

(3) Occasionally the head is in the midplane of the pelvis, and although the uterine contractions are severe we notice no progress. Many of these cases are arrested at this point because there is not proper flexion. Forceps can be applied and flexion promoted. Slight traction applied while the uterus is contracting will result in advancement of the head. This happens because the diameter of the fetal head has been shortened. Here again, the forceps can be removed and normal delivery will be the result.

(4) When the head is on the perineum, but the levator ani muscle is fatigued and unable to start the extension which should normally take place at this time, the mother may labor for hours and there will be no progress. The proper application of the forceps with promotion of extension will allow the baby's head to progress forward under the pubic arch and consequently over the perineum.

(5) When any woman is in labor and is having regular, strong, active contraction without progress, and assuming that the relative size of the fetal head and the pelvis is such that delivery can be accomplished by the normal route, forceps should be applied and normal progress started.

In all these cases when the cause of the trouble is corrected, forceps should be removed and the case will terminate normally.

Since Dr. Eaton has made a comparison of the number of instrumental deliveries in our two institutions, I must be guilty of using forceps most in the Deaconess Hospital, thereby raising their percentage of instrumental deliveries. If the records of all such instrumental deliveries be examined, it will be found that the greater percentage of these cases come within the type of cases enumerated above, forceps being applied for, (1) rotation of the fetal head in posterior-occipito positions, (2) to promote flexion in those cases which were delayed because of no apparent progress, (3) to promote extension when the head is on the perineum and further progress seems impossible.

In all of these cases when the cause of the trouble was corrected the instruments were removed.

The nurse has charted these as instrumental deliveries, but in reality they should not be classified as such. If such cases are classed as instrumental deliveries, it will greatly reduce the per cent of instrumental deliveries at the Deaconess Hospital.

A doctor should carefully watch his patient after she has started in labor, and when he sees by repeated examinations, that the patient is not having normal progress he should ascertain the cause and correct it. Many cases can be saved hours of labor, by the judicious application of forceps without harm to the mother or baby.

CRITICAL STUDY OF OBSBTETRICAL DEATHS IN THE TWO HOSPITALS FOR 1925 AND 1926.

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The records show thirty-nine confinements in which one or both mother and fetus died. Fifteen of these cases were primiparae; number of fetuses dead, thirty-one; number of mothers, ten; number of fetuses still-born, fifteen. Of the living babies, one died of icterus-gravis neonatorum, on the tenth day. This one had prolonged and se-

vere bleeding from the cord. One died after induced labor, manual dilatation and high forceps. In one miscarriage at six months, the baby was atelectatic, but lived several hours by the use of oxygen. One baby seemed premature, was cyanosed, never nursed well, died on the third day; Wassermann was negative. One baby the physician was unable to resuscitate, no reason given; one right occipito-anterior position, no further record. One baby died following cesarean section after unsuccessful attempt to deliver by forceps; two cesarean babies died after three days; two eclamptic mothers, with their babies, died following cesarean; one eclamptic mother, with the baby, died without delivery. In three breech presentations, each lived a few hours; in one difficult instrumental delivery, the child nursed very little, had convulsions, died on the third day. One premature baby (seven months), cyanosed, lived a few hours.

Total number of premature births, eight; number of breech presentations, five; number of fetuses lacerated, three; high forceps delivery, four; low forceps delivery, two; versions performed, two.

No causes for premature births were assigned, nor, with the exception of two cases in which Wassermanns were made, was there any recorded attempt made to determine the causes of the prematurities. Investigations of the mother for causes, such as syphilis, toxemias, tumors, use of drugs, traumatism, etc., apparently were not made; nor were the diseases of the cord, such as torsion, knots, stenosis, considered; nor critical examination of the placenta for infarcts, apoplexies, etc., made; and, if paternal conditions were considered, nothing was made of record.

Of the ten maternal deaths, one died of hemorrhage from placenta previa. This case was twice packed before delivery was attempted; the placenta covered one-third of cervical area; the patient was in the hospital but a short time before delivery, which was by version. One mother died of shock, which appeared some hours after delivery, with manual delivery of a very friable placenta. The cause of the shock was not discovered until the autopsy, which revealed an inversion of the uterus with the fundus at the external os; also dilated stomach and right ventricle. Three mothers died of eclampsia with cesarean section; two died of eclampsia without cesarean section, one of these without being delivered—cesarean was not done because fetus was dead; two died of advanced tuberculosis, with cesarean section; one of advanced tuberculosis, with-

out cesarean section, but lived several weeks after delivery. This makes eight cases of eclampsia, in which six mothers died, and only two babies lived. There were six cases of cesarean section, of which five mothers died, and two babies died after delivery. In only two cases of eclampsia was any record made of blood pressure—200/130, 165/120. In the first case the mother lived, and the seven months fetus was born twenty-three days after convulsions ceased and was macerated.

The question of the advisability of cesarean section in eclampsia is to be discussed by Doctor Fournier, but I must express my doubt as to the indication for the operation in such cases, since the newer forms of treatment give better results. Also, the practice of cesarean section in cases of advanced tuberculosis, is open to severe criticism. It probably secures a living baby, but very probably shortens the life of the mother. In my experience, I have seen apparently hopeless tuberculous mothers delivered of healthy children and the mothers have lived, in some cases, to care for them for eight to ten years of their early life.

ARE WE PRACTISING GOOD OBSTETRICS?

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It is the purpose of this meeting to place before the Staff a review of the obstetrical practice of this hospital during the years 1925 and 1926, and to draw comparisons between our work and results and those of other standard hospitals.

The papers of Doctors Eaton, Charvoz and Fournier have clearly outlined the latest and most accepted views on the indications, contra-indications, conditions and treatment of pathological obstetrical cases. I shall attempt to apply what they have told us to the obstetrical practice of St. Joseph's and to draw what conclusions are apparent in comparison with the practice and results in other hospitals. Let me further preface my remarks by the observation that this study has been rendered extremely difficult and somewhat uncertain by the paucity of data in our pathological obstetrical records. The fact that a case had to do with childbirth, whether by forceps delivery, cesarian, or complicated by eclampsia, seemed to furnish the operator with the necessary excuses to wash his hands of any semblance of an entangling alliance with the record. I shall go a little more into detail on this subject as I review the various classes of cases.

In all, there were 341 deliveries in this hospital in the past two years. In my study, I am classifying as pathologic only those cases complicated by the use of forceps, those delivered by cesarean section, and eclamptics with convulsions. Pre-eclamptic and other toxemias, prolonged spontaneous deliveries, unaided breech cases, tuberculous cases, without operative interference, are not reviewed. Neither have I reviewed the two placenta previas, a like number of versions, abnormal presentations or the one postpartum hemorrhage case. There were 288 relatively normal cases, while only fifty-three of the total deliveries are considered here: thirty forceps, twenty cesareans and eleven eclamptics—eight of which underwent cesarean and are considered in both classes.

Let us first consider the forceps cases. Out of 341 deliveries, thirty, or about 9 per cent, were delivered by forceps. This is a most favorable comparison with other statistics. Our own Deaconess Hospital had double this number, seventy-seven out of 430, or 18 per cent, in the same period. Wesley Hospital, Chicago, reports 13 per cent of their cases to have been delivered by forceps—12 per cent of the low variety, 1 per cent high. Cook County Hospital has a record of about 15 per cent in over 15,000 cases. Chicago Lying-in Hospital, 25.5 per cent forceps deliveries in 17,000 cases. This last percentage seems rather high, and I should think is due to two causes, to-wit: The large number of difficult cases referred and the racial impatience and anxiety of the vast majority of this hospital's inmates. Dr. Eaton has condemned this as an indication of forceps, but anyone who has practiced in the Chicago Lying-In service must recognize the truth in my statement.

Of our thirty cases, five, or 1.5 per cent, were admitted in the records as being "high forceps." Two of the remaining twenty-five were set down as low, while one is left to guess at the character of the remaining twenty-three. I must also say that in only one or two of the records was there any mention of the fetal head having reached the perineum, which would designate the case as a low forceps. In no record could I find that the mother had been assisted by drawing the head down to the perineum and then allowing spontaneous delivery, which is the proper method for forceps. I presume that this was done in a number of cases in as much as there were no tears; but in the vast majority there were very deep and extensive internal and external tears. In no record could I find any men-

tion of injury to the fetal head, yet one knows that this must have occurred more or less frequently. Although there were five high forceps deliveries, no mention was made of axis traction forceps being used, and I think it is safe to assume that, of the thirty cases, a great many should properly be designated as mid-plane forceps. Forceps were applied on the after-coming head twice; in occipito-posterior, once; brow presentation, once; face, twice. In a few other records, the presentation and position were mentioned; but in a great number, this was evidently not considered pertinent. The time element and the condition of exhaustion of the mother as indications for the application of forceps could be deduced in most of the cases—not all, by any means. Dystocia ranged from four hours to three days, most of the cases being assisted within twenty hours of the time labor commenced.

Only one operator took the trouble to note his indications for the application of forceps (in both his cases). In the other cases, if it were not for the generally low average of 9 per cent, one might argue, after a diligent and futile search of the records for indications, that the operator did not care to discuss the matter. This criticism is pointed rather at his manner of keeping records than to impugn his motives.

Pelvic measurements, which might be expected to explain the reason for a prolonged hard labor necessitating forceps assistance, are lacking in twenty-nine of the thirty case. This seems inconceivable, but in only one record was I able to find any mention of size or shape of the pelvis, either inlet or outlet. Perhaps our accouchers do not make a practice of measuring the pelvis. I think this is not the case. There is certainly no excuse for this negligence when the obstetrical examination sheet has a nice little box score all printed for the figures. I may add, here, that not a single examination was made out. Our percentage of 1.5 for high forceps coincides with the Chicago Lying-In and is about .5 per cent above Wesley Hospital. Our Deaconess Hospital has 6 per cent in the same class in the same two years. Our general average of 9 per cent is very low, so that, irrespective of how we may condemn the records, we must admit that our obstetricians are conservative in their judgment when they weigh indications and contra-indications for forceps delivery.

Of cesarean operations there were twenty, or about 6 per cent. This percentage is very high and compares unfavorably with

all hospital records reviewed. Wesley Hospital reported but one per cent. Cook County had but 1.1 per cent in 15,000 cases. Chicago Lying-In Hospital reported but 2.8 per cent in over 17,000 cases. It is less unfavorable when compared with the Deaconess Hospital, which had a rather high percentage of 3.75. This disparity in comparison with Chicago hospitals may be more apparent than real. Their records cover from seven to eleven years and the incidence of cesareans has increased rather rapidly in the last two or three years. Thus statistics do not allow of a comparison with the increase in their admissions during the same years. Other Chicago hospitals give from ten to forty-two per thousand, while a total of seventy-four Chicago hospitals give an average of nineteen per thousand, or 1.9 per cent. Both of our local hospitals are way above this figure.

I think that we must critically ask ourselves why this high cesarean rate. Is it because we have more absolute and more relative indications? By absolute indications, we mean pelvic obstruction, either bony or by tumors. By relative, we consider the surgeon's judgment only.

Under absolute indications we may consider eight cases. One was a primipara, and diagnosed as a contracted pelvis. No pelvic measurements were given, and no sort of examination was recorded to support this diagnosis. The baby died in a few hours. Five had had previous deliveries; one by successful version; one unsuccessfully by forceps, the child having died; and the other three were simply noted as having had either hard forceps deliveries or prolonged labor. In this class, also, pelvic measurements and examinations were not considered worth reporting. Two cases were first attempted by forceps and then operated, when forceps failed. In one of these cases, the child died in 48 hours. There were no pelvic measurements nor examinations recorded in these two cases.

Eight cesareans were performed upon eclamptics. Of these eight, three died, giving a mortality of 38 per cent delivered by this means. Cook County Hospital, in 170 cesareans, had only ten eclamptics, with a mortality rate of 20 per cent. Chicago Lying-In Hospital operated forty-six eclamptics and pre-eclamptics, with but one death in 487 cesareans. In reality they operated twelve eclamptics with convulsions, out of seventy-two admitted, with no deaths. The Deaconess operated five out of ten eclamptics, with one maternal death, or 20 per cent.

We must ask ourselves, again, why this high operative mortality in eclamptics. There can be only one answer, and that is, we do not treat them properly, either pre- or post-operatively. As I shall show later, Doctor Fournier's paper points the way. We must also question ourselves as to the soundness of our indications for operative delivery in eclamptics. No doubt it is the easiest method for most of us, but is it the accepted method of treatment?

As I have said, DeLee's admitted seventy-two eclamptics and only twelve, or 16.2-3 per cent, were operated. There were no deaths among the cesareans and but five deaths in the whole series. Of these five, three were moribund upon entrance. Cook County Hospital operated only ten eclamptics in 170 cesareans, or 6 per cent. They had but one death. We operated eight out of fourteen eclamptics, or 57 per cent, with 38 per cent mortality. From these figures, it is evident that our surgeons consider eclampsia an indication for cesarean in 57 per cent of the cases in this hospital, and in 50 per cent at the Deaconess, while the obstetricians of larger hospitals consider it an indication in only 6 to 16 per cent of the cases. Perhaps the difference lies in the point of view of the surgeon and that of the obstetrician. According to our mortality rate, I think that we have plenty to learn from the obstetricians.

Five of our cesareans were performed because of advanced or active pulmonary tuberculosis. This is another relative indication and evidently, again, more in vogue with surgeons than with obstetricians. Of the Cook County cases, not one of the 170 cesareans was performed because of this indication. Of 487 of DeLee's Lyin-in Hospital, tuberculosis in conjunction with a flat pelvis was mentioned but once. DeLee, in his text book, does not mention it as an indication and in forty-nine of his personal cases cited, it is not mentioned. Two of the five mothers died in the hospital. Of the other three I know nothing.

To summarize cesareans: There were twenty in all, or 6 per cent of all obstetrical cases admitted. Eight of these were operated for contracted pelvis; type of contraction, measurements, and history not given. Eight were operated for eclampsia, with three deaths. Five were operated with tuberculosis as an indication, with two deaths. Of the twenty there were five deaths, or 25 per cent mortality with the mothers, and four, or 20 per cent fetal mortality. Compare with DeLee's forty-eight cases with a maternal mortality of 5.26 per

cent and 2.2 per cent fetal deaths! Cook County had a maternal mortality of 10 per cent. It would seem, from these figures, that our mortality rate compares as unfavorably as does our operative rate, and the only conclusions that can be drawn are that there is too much surgery, upon cases in which the indications, contra-indications and conditions are not carefully weighed. In other words, there is too little of the practice of obstetrics and medicine in this class.

There were fourteen eclamptics admitted in the two years. Of these, five, or 35 per cent, died. Two of these died shortly after entrance in a moribund condition. The other three must be classed as operative deaths. Of the fourteen cases, only two received magnesium sulphate either intravenously or sub-cutaneously. As Dr. Fournier has so well pointed out, this has been the accepted specific treatment for several years. Practically all of these cases should have had the advantage of this method for controlling convulsions. Even though operated, the death rate would have been greatly reduced. It must be due to better methods of treatment in these cases that other hospitals are able to make our records look like criminal negligence.

The records of these cases are no better than are those in the other pathological cases considered. In only one or two were any blood pressure readings recorded. Urine reports were profuse, but then the doctor did not have to make the examinations nor record them. I can not imagine that any other class of dangerously sick patients would be allowed to remain in the hospital without some sort of physical examination and history recorded, as was the case in practically all our eclamptics.

To summarize eclampsia:

We had fourteen cases with a maternal mortality of 35 per cent and a fetal mortality of 43 per cent. DeLee's shows but 6.9 per cent maternal mortality in seventy-two cases and but 4 per cent of post-natal deaths in the same series. The figures speak for themselves. Something is wrong in our treatment of eclampsia. Let us hope that what we have learned tonight on this subject may sink in and that the records of the next two years may show an astounding improvement in this class of cases.

In conclusion, I must reiterate that the pathological obstetrical records in this hospital are terrible, entirely inadequate for the purpose of study, entirely lacking in indications and detail of conditions present

upon which operative interference was based, and no value for scientific purposes.

I would further state that it appears, from a study of the records and our results, that there is entirely too much surgical interference. Perhaps this point could and will be argued, that my deductions are wrong; but if so, it is because the individual records do not state the operator's reason for such interference, and, furthermore, the mortality results, considered in the meager light thrown upon them in the records, seem to justify the conclusions.

Lastly, eclampsia is a cureable disease and we have miserably failed to discover it in this hospital.

MANAGEMENT OF ECLAMPSIA AND THE PRE-ECLAMPTIC STATE

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Of all the complications of pregnancy, eclampsia is, perhaps, the most dreaded. This is as it should be, for there is probably nothing so terrifying as watching a woman in eclamptic convulsions.

Eclampsia is one of the so-called toxemias of pregnancy. Toxemia is probably a misnomer, for, as yet, no toxin has been discovered in the blood of a woman suffering with eclampsia. The word toxemia is generally associated with toxin and such a condition does not primarily exist. Eclampsia is due, rather, to the overload suddenly placed on the maternal organism, for the pregnant woman shows a condition of rapid growth and a rapid increase in weight superimposed on an adult organism that has ceased to grow. This results in a disturbance of metabolism and this, in turn, affects the liver and kidney function.

The eclamptic attack may occur suddenly, without any warning, but this usually is not the case, there being symptoms of headache, dizziness, spots before the eyes and, probably the most important, a feeling of epigastric pain. These warnings should be heeded and the patient subjected to an exhaustive examination, for they generally presage serious trouble.

An examination usually shows edema of the feet and eyelids, more or less marked anasarca, with pasty skin and a coated tongue, and tenderness over the pit of the stomach. With high pulse tension and an accentuated second heart sound, the blood-pressure may reach 240. Other symptoms are intensely exaggerated reflexes; diminished output of urine; high specific gravity albumen, with hyaline and granular casts, and low urea output. These symptoms may

be called those of pre-eclamptic toxemia, and a patient having them may be said to be threatened with convulsions.

There were eleven cases of eclampsia admitted to this hospital during 1925 and 1926, and, of these eleven, there were four maternal deaths, giving a mortality of 36.3 per cent. Two of these were admitted in the pre-eclamptic state, and if these are deducted the mortality would be 44.4 per cent, a very high mortality indeed when compared with the Chicago lying-in mortality of 7.7 per cent, almost six times as great.

One of these patients was in a moribund condition on admission and died 9 hours later without having received any specific treatment except croton oil and epsom salts by mouth. In the 9 hours she received 45 drops of croton oil. It seems to me that this patient received a very large amount of this oil. Hare, in his practical therapeutics gives the dose as 1 minim placed on the tongue and says that in that dose it acts as a violent watery purge. This patient got 47 minim, which seems an unreasonably large dosage.

Of the eleven patients admitted, four were at term; one at 8½ months; four at 8 months; one, at 7½ months, and one at 6½ months. The manner of delivery was as follows: spontaneous after induction, one; manual dilatation and forceps, one; Cesarean section, eight, and of these eight there was a maternal death of three, or 37.5 per cent. Other treatment consisted of magnesium sulphate, glucose, sodium bicarbonate, insulin, croton oil and veratrium viridi; in only one case was venesection done.

There was no record of any prenatal care in the cases. The value of proper prenatal care in the prevention of eclampsia is recognized by all and, probably, if systematic care had been carried out in these patients, some of the attacks might have been prevented. Not all cases of eclampsia are preventable. In just a few of this series was there any record of blood-pressure having been taken.

What struck me rather forcibly was the large number of cesarian sections performed. As soon as the patient was brought into the hospital she was immediately sent to surgery; no attempt, in the majority of cases, had been made to carry out any specific treatment. In view of the fact of the high mortality rate in our eclamptic cases here, it probably would be advisable to carry out a more conservative line of treatment. Many men become panicky when they see a woman in eclamptic convulsions,

and their first thought is immediate delivery.

In the Johns Hopkins hospital, between 1894 and 1912, eclampsia was largely treated by the active method. This meant that immediate delivery was the first object and, apparently, here we have gone back to the days of 1894. From 1912 the therapy gradually followed more conservative lines. Operative intervention was limited almost entirely to low forceps or version and extraction after spontaneous dilatation of the cervix had taken place. Major operative measures were largely dispensed with and emphasis was laid principally on a copious venesection. Generally 500 to 700 c. c. and, occasionally, as much as 1,000 c. c. was withdrawn. Morphine was also employed to a large extent.

The routine treatment carried out was as follows: (1) The patient is placed in a quiet darkened room and is disturbed as little as possible. (2) Morphine, ¼ gr., is given hypodermatically at once. This may be repeated as indicated. (3) The patient is kept turned on one side with the foot of the bed elevated as long as the coma persists. (4) Venesection is performed after the second convulsion, if necessary, under nitrous oxide anesthesia. The amount of anesthetic depends on the fall of systolic blood-pressure or alarming changes of the pulse, and it is omitted in anemic individuals. (5) Water is given freely, as desired, when conscious. The comatose patients receive 500 c. c. of a 5 per cent glucose solution intravenously and this may be repeated in 12 hours. (6) No attempt is made at delivery until the cervix is fully dilated, unless some definite maternal indication, apart from the eclamptic condition, is present. Under this conservative regime the maternal mortality fell from 23 per cent to 13 per cent, almost half, and the fetal mortality remained the same, 57 per cent. This shows the signal advantages to the mother from conservative treatment. The routine performance of cesarean section is particularly to be condemned.

In the Los Angeles general hospital, very remarkable results were obtained in the use of magnesium sulphate intravenously. They were able, by this method alone, to cut their mortality rate from 36 per cent to 9 per cent. A method of treatment which will do that is certainly worthy of adoption. Since the adoption of this treatment there has been only one cesarean section performed and that was done for dystocia and not because of eclampsia.

The routine treatment followed in this

Los Angeles hospital, and which is posted for a guide, is as follows: Pre-eclampsia cases, with blood-pressure 150 or higher, in addition to the usual sedative and elimination treatment and dietary regulations, 20 c. c. of 10 per cent solution of magnesium sulphate intravenously. Blood-pressure is to be taken twice daily and intravenous magnesium sulphate repeated if blood-pressure does not come down. In eclampsia, 20 c. c. of a 10 per cent solution of magnesium sulphate is given intravenously as soon after the first convulsion as possible. This is to be repeated every hour until convulsions are controlled. Blood-pressure to be taken every hour after the convulsions are controlled. If the blood-pressure begins to rise, again nearing its height at time of convulsion, repeat magnesium sulphate intravenously, also repeat if convulsions recur. If patient is comatose or very restless, and blood-pressure is falling, give chloral hydrate, gr. 20; and sodium bromide, gr. 40, per rectum; oxygen inhalations after each convulsion until breathing is normal. If patient is in labor give nitrous oxide gas for pains. If in the second stage labor, and proper progress is not being made low forceps extraction or version may be done. Cesarean section is to be done only for absolute obstetric indications. After patient is delivered, blood-pressure is to be taken daily and intravenous magnesium sulphate to be repeated as indicated by rise of blood-pressure.

It might be well to post this treatment likewise in our obstetrical department so that men doing this work will have some definite line of treatment to follow. The results obtained in the Los Angeles general hospital are startling enough so that it behooves us at least to try out this procedure and see if we cannot reduce our high mortality rate.

Wilson, in a recent article in the A. M. A. Journal, recommends the use of glucose and sodium bicarbonate, or sodium bicarbonate alone, given intravenously. He bases his theory on the bicarbonate of the blood being a first line of defense against acidosis, and by giving sodium bicarbonate intravenously he raises the alkali reserve. He gives 10 to 15 grams of soda and attempts to raise the carbon dioxide combining power of the blood plasma to within normal limits of from 55 to 70. A series of 14 cases were reported without loss of mother or child—a very remarkable result. This procedure is worthy of our trial.

In conclusion: I would suggest that: (1) intravenous administration of magnesium

sulphate be tried in eclamptic cases that enter this hospital; (2) Glucose and sodium bicarbonate given intravenously seems to be beneficial in the treatment of eclampsia; (3) that surgical interference in the eclamptic be limited to assisting labor in the second stage when indicated; (4) cesarean section in the eclamptic is contra-indicated except in the presence of absolute obstetric indications.

PIONEERS IN THE MEDICAL HISTORY OF NEW MEXICO

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Presidential address, before the Forty-fifth Annual Session of the New Mexico Medical Society, held at Carlsbad, May 9 to 11, 1927.

The great southwest, and New Mexico in particular, possesses a historical background, the antiquity and immensity of which is not sufficiently appreciated and understood unless one has an opportunity to properly inform himself concerning it.

Twitchell in his book, "Leading Facts of New Mexican History," commenting on the length of time New Mexico is known to have been inhabited by the pueblos and cliff dwellers says:

"When the spirit of conquest induced the Romans to lead their legions beyond the Alps into the plains of Gaul, New Mexico had been for centuries preceding, the pathway of migratory people. The races which submitted to the Roman arms were more barbaric than those which inhabited the table-lands and valleys of New Mexico during the first centuries of the Christian era. Buildings sufficiently large to accommodate the inhabitants of a modern American village lie buried, or in ruins, mute evidence of the existence of a race whose modes of living, customs, ceremonies and habits are fruit ful subjects of study today. These buried structures now being uncovered, demonstrate the worth and ability of their builders. The cave and cliff dwellings, only lately scientifically explored, have been productive of relics demonstrating a knowledge on the part of their former inhabitants akin to the arts and sciences possessed by those who builded the pyramids of Egypt."

It is from these early people that we have our first practitioners of the healing art in New Mexico, and they were known as "medicine-men." Dr. Leonard Freeman, in a most interesting article, "Surgery of the Ancient Inhabitants of the Americans," has given an excellent description of the early "medicine-men" which I wish to repeat to you, in part:

"Among these early inhabitants of New Mexico there were two causes of medical and surgical ailments recognized, one natural and the other supernatural. It goes without saying that supernatural ailments can be treated by supernatural means only, which accounts for the existence of the so-called "medicine-man" with his impressive fetishes, antics and incantations. In this connection it should be understood that the word "medicine" was not confined to material remedies, but had in addition a magical and supernatural significance. Hence a "medicine-man" was not only a physician in our

sense of the word but was also a sort of priest, prophet, magician and all round dealer in mysteries. The "medicine-man" was usually a person of more than ordinary tact, knowledge and intellect. In addition to being a surgical and medical authority he was also consulted concerning the spiritual and temporal welfare of his people. He had a dignified and firm belief in himself and his method and there is no doubt that he exercised a hypnotic influence on his patients, leading to relaxation and sleep which may have facilitated the recovery of some who would have been given up to die by more civilized practitioners. It was not much easier to become a "medicine-man" in those days than it is now. It was the usual custom to spend at least a year with a preceptor, paying him well for his instruction, and usually to study under more than one. As with the modern doctor, even after graduation, the life of the "medicine-man" was not one of pampered ease. He was compelled to respond to every call night or day, although the Pueblos permitted an exception to the rule, if the unwilling physician could catch the messenger within a given distance and kick him. How many of us wish we had the same privilege."

Concerning the various therapeutic measures used, Freeman further states:

"Wounds were treated by suture, drainage, irrigation, suction, cauterization and the application of powders, salves, and saliva. It is probable that this primitive race exhibited greater resistance to infection than is generally met with today. Human hair, later horse hair and plant fibers were used as suture material. Needles were made from thorns, bones, and wood. Irrigation was freely employed, a quill, or hollow bone and a bladder making a very good syringe. Much attention was given to the extraction of foreign bodies, especially arrow heads, the favorite method being to accomplish this by long continued pressure rather than by direct means.

"Powders of various kinds including pinon-gum and other balsams, charcoal, ashes, etc., were used for packing deep wounds and sprinkling on superficial lesions. Cauterization by means of a coal of fire or a hot stone was in common use as was scarification and phlebotomy. Fomentation and poultices of plants, leaves, barks, etc. were used in the treatment of inflammation, supported by cupping, counter-irritation and cauterization. Bleeding was controlled by local pressure or the application of a hot stone, coagulation being hastened by cobwebs or plant fibers although the use of tourniquet was not unknown. Trusses made from pads and bandages were used to control hernias. There is reason to believe that considerable skill was manifested in the treatment of fractures which were quite common, due to the places of abode in caves on the high precipitous sides of canyons. Adjustments of fractures were by manipulation rather than permanent traction. Splints were of bark and wood bound together with thongs. The splints were padded with soft clay which must have been efficient and comfortable. Well padded crutches and a sort of orthopedic bark corset have been found in the ruins of the dwellings of these early people."

In conclusion, Dr. Freeman says:

"In our pride of knowledge and achievement let us not forget the prehistoric doctors of America. Their theories and methods were different from ours, but they belonged to the same profession, they were much in earnest, and like ourselves, they did the best they knew how for the good of suffering humanity."

New Mexico was first visited by Europeans sometime between 1535 and 1538, and it was one of these early visitors, Cabeza De Vaca, who performed the first opera-

tion, by a European, we have any record of. He removed an arrow from the arm of an Indian, somewhere in south eastern New Mexico, sutured it and obtained union by first intention.

The Spaniards sent many expeditions into New Mexico after 1540 and accompanying these early explorers were numerous friars. In their hands largely was the practice of medicine and surgery for the next two hundred and fifty years in so far as those of European extraction were concerned.

From the Spanish Archives we learn that, in 1792, there was located at Santa Fe Dr. Cristobel Larranaga, sent by the Spanish commandante at Chihuahua, and in August, 1804, Governor Chacon received a letter from Nemesio Salcedo, commandante at Chihuahua, in which he was ordered to send by the next cordon this same surgeon Larranaga, together with six or eight children to be vaccinated at Chihuahua, the expense to be borne by the wealthier citizens of Santa Fe. Larranaga knew nothing of inoculation and he was sent to Chihuahua to learn about the treatment. The first vaccination against small-pox done in the United States was done in Philadelphia in 1800, and the first in Europe in 1796, so we see even in those early days New Mexico was not so far behind the times.

Larranaga returned to New Mexico in 1805 and seems to have been engaged in vaccinating all the children from El Paso to Santa Fe. He reported to Governor Alencaster the presence of measles and also two cases of leprosy, whooping cough and dysentery. He was paid by the general government and not receiving his pay promptly threatened to resign. However, hearing from Chihuahua that such action would not be received, determined not to do so. In 1808 he was experimenting with dry vaccine and reported to the governor the names of the two first vaccinated. In 1810 he was fined for issuing a false certificate of illness to an officer of the Santa Fe garrison.

The first physician from the United States visiting Santa Fe, or any portion of the province in Spanish times, was a Dr. Robinson, who accompanied Major Pike on his expedition to the Rocky Mountains, endeavoring to discover the sources of Red River, in 1805.

Robinson left Pike on the north bank of the Conejos, in Colorado, and marched alone to Santa Fe. The doctor was the first American physician to administer professionally to a Spaniard in New Mexico and a governor of the province. Even in those days the professional jealousies of the fol-

lowers of Esculapius were in evidence for Dr. Robinson tells us that on his arrival at Santa Fe, to which place he had come from Ojo Caliente, guided by some Indians, after having had two interviews with Governor Alencaster, he was invited to dinner by his excellency, who was slightly afflicted with the dropsy. He requested the doctor's advice as to his case. Robinson prescribed a regimen and mode of treatment, which happening to differ from the one adopted by a monk and practising physician of the place, brought on Robinson the enmity and ill-offices of the governor. Later, having been sent into the interior along with Don Facundo Melgares, a Spanish lieutenant of the Santa Fe garrison and afterward governor of the province, Robinson says: "Since I have been with him I have practiced physic in the country, in order to have an opportunity of examining the manners, customs, etc., of the people and to endeavor to ascertain their political and religious feelings, with every other species of information which would be necessary to our country or ourselves."

Between the years 1805 and 1827, we have no record of any American physicians in New Mexico, but in the course of the next four years three men came who were to have a great influence in the future development of the country. Each of the three was a physician and each of them later identified himself with trade and commerce, the last two mentioned practiced medicine very little if any. These men were Dr. David Waldo, who came in 1827, Dr. Henry Connelly, who came in 1828, and Dr. Josiah Gregg, who came in 1831.

Dr. Waldo became a citizen of New Mexico and lived at Taos where he practiced his profession in the early thirties. He was born in West Virginia in 1802, graduated in medicine in 1822 at Lexington, Kentucky, and moved on to Missouri where he engaged in the practice of his profession. Later he became interested in the overland trade to Santa Fe and Chihuahua. He died at Independence, Missouri, in 1870. He has the distinction of being the first American physician to make his home in New Mexico and practice medicine here.

Dr. Henry Connelly, another physician and surgeon of note, was identified with the early history of New Mexico. He was born in Kentucky in 1800 and died at Santa Fe in 1866. He graduated from the University of Kentucky in 1828, moved to Missouri, where he engaged in the practice of medicine. The blood of pioneers was in his veins and he joined a caravan for Mexico, living at Chihuahua until the beginning of

the Mexican war, when he moved to Peralta, Albuquerque, Santa Fe, and Las Vegas. He was appointed governor of the territory by President Lincoln in 1861 and again in 1864. He was a powerful figure in New Mexico at the beginning of the Civil War and it was largely due to his influence that New Mexico was saved to the Union.

Both Drs. Waldo and Connelly, in their communication with the Missouri frontier in those early years, gave a great deal of publicity to the beneficial effects of the climate.

The first documentary proof we have of any knowledge of New Mexico's climatic advantages is found in the work known as "Commerce of the Prairie" whose author was Josiah Gregg. He came to this country in 1831 with an overland caravan. He says in the preface of his book, "The effect of this journey in the first place was to re-establish my health and in the second place to beget a passion for prairie life which I never expect to survive."

In mentioning the lack of medical science and physicians in New Mexico, Dr. Gregg makes the following observation: "Medical science is laboring under great disadvantages; there being not a single native physician in the province; although a great multitude of singular cures are daily performed with indigenous roots and herbs that grow in abundance all over the country. But lest a knowledge of this scarcity of doctors should induce some of the Esculapian faculty to strike Santa Fe in quest of fortune, I would remark that the country affords very poor patronage. Foreign physicians who have visited New Mexico, have found practice quite unprofitable; not more for the want of patients than on account of the poverty of the people. Nine-tenths of those who are most subject to disease, are generally so destitute of means, that the only return they can make is, 'May God pay you!' Even the more affluent classes do not hesitate sometimes to liquidate their bills in the same currency. A French doctor of Santa Fe, who had been favored with too many payments of this description, was wont to rebuke their 'May God pay you!' with a 'No, sir, your pocket shall pay me.'"

The first American physicians or surgeons to come to New Mexico at the time of the Mexican War were those attached to Kearney's Army of the West, all of whom were in Doniphan's command. These were Dr. Robert F. Richardson and Dr. De Camp, located at Santa Fe and serving with the corps under Lieutenant Abert. Other surgeons who accompanied Colonel Doniphan, all of whom were from Missouri, were:

Thomas M. Morton, George Penn, B. W. D. Moore, I. L. Morton, and I. P. Vaughan.

The chief surgeon of Price's regiment was Dr. W. S. May, who remained at Santa Fe at least until 1850. Later came others, all of whom were attached to the army and who served at the several posts which were established, from time to time by the military authorities, at Santa Fe. Among the earliest, serving with the regular troops, was Surgeon J. F. Hammond, who along with Colonel J. M. Washington signed the treaty with the Navajos, in 1849.

In 1850 the two most prominent physicians practicing at Santa Fe were John D. Robinson and Dr. Carroll Thomas. Another not less prominent in the territory was Dr. W. C. Bowman. Others were Dr. Byrne and Dr. McParlin, who accompanied Governor J. S. Calhoun on his journey across the plains in 1852. Among the prominent army surgeons serving with the troops in New Mexico after 1862 were Surgeon Allen F. Peck and Surgeon J. F. Shout. Dr. O. M. Bryan afterward came to Santa Fe and practiced after the close of the Civil War. Medical practitioners not attached to the army at that time at Santa Fe were Dr. Otto Menger, and Dr. Maurice Kieckbach.

One of the earliest physicians to come to New Mexico during the fifties and not making the capital his home was Dr. D. Camedon de Leon, who took up his residence at Albuquerque where he practiced until the breaking out of the Civil War, leaving with some of the army officers who resigned and joined the Confederacy. De Leon became surgeon in chief before General Robert E. Lee took command and after his term of service had expired took post-graduate work in one of the European universities. Several years afterward he returned to New Mexico and again located in Albuquerque. In 1872 he removed to Santa Fe where he practiced until his death. Another, who came with the troops at the time of the occupation by the American forces, was Dr. Kane. When New Mexico was made a territory he began to practice at Mora. It is said that he was the first surgeon to perform an operation for hernia in the southwest. He was known all over the Southwest, was of a highly sympathetic nature, and died in 1878.

Dr. E. R. Smith came to New Mexico in the fifties and was located at Fort Union. He subsequently took up his residence at Las Vegas where he practiced for many years. He was also a manufacturing chemist and produced the first chloroform fit for use in the Territory. Another Fort Union surgeon was Dr. Peters, who attained

great distinction on account of his great literary attainments. In 1858 he published "The Life and Adventures of Kit Carson," being the only person ever authorized by Carson himself to do so.

Dr. Lewis Kennon, an army surgeon serving in the sixties, was graduated from the classical department of the University of Virginia and was one of the most scholarly of all the physicians of the earlier days. Resigning from the army, he established himself at Santa Fe, later removing to Silver City. Dr. Kennon was the first president of the Board of Medical Examiners and always manifested a great interest in the achievements of his profession. He retired from the practice and removed to the state of Oregon where he died in 1894 at an advanced age.

Dr. Robert H. Longwill was another of the earlier practitioners who came to New Mexico after the close of the Civil War. Dr. Longwill was the author of the first legislative enactments in the Territory governing the practice of medicine. He was a prominent politician and was considered very wealthy. He was a graduate of Jefferson Medical College, was a fine specimen of physical manhood and very successful in his practice. He died at Philadelphia, having retired from practice.

Dr. G. H. Shout was the post surgeon at Fort Union in early days. When the regiment was mustered out of service he began the practice of his profession at Las Vegas where he was well known. He died at Las Vegas in January, 1884.

Another post surgeon at Fort Union in the early sixties was Dr. William A. Hammond, who afterward located in Washington and later became an international figure in medicine and surgery.

Dr. Alexander, one of the pioneer physicians of Santa Fe, contributed generously to medical literature. His career extended over a period of years, and he was widely known throughout the territory. Dr. Jane-way, a celebrated physician and surgeon of New York city, and Dr. Roberts Barthlow, both men of national reputation, also practiced at Fort Union as army surgeons in their younger days.

Dr. J. M. Whitlock, another army surgeon, came to New Mexico before the Civil War. During the War he was surgeon of the First New Mexico Volunteers and was killed in a mutiny at Fort Stanton in 1863.

Dr. Russell was one of the first physicians to locate in Elizabethtown, coming to that place in the days of the gold excitement. He was the first mayor of the town—in 1870. His administration continued but

one year, ending with the termination of the city government, in 1871.

From 1870 on, many physicians and surgeons came to New Mexico to make their home, and the list of new comers becomes so large we are unable to mention any more in a paper of this sort. No doubt, the names of some who resided here prior to 1870 have not been mentioned, if so, it is because of lack of proper data and not because of any desire to slight any of our pioneer medical practitioners.

The first medical meeting of any sort held in the state with the idea of forming an organization, took place December 31, 1881, when the Las Vegas Medical Society was organized. The first officers were: President, J. H. Shout; Vice President, E. H. Skipwith; Secretary, H. P. Peebles; Treasurer, C. C. Gordon; and Librarian, Russell Bayly. Besides the above mentioned officers other charter members were the following: M. W. Robbins, Francis Reiger, W. R. Tipton, M. M. Milligan, E. C. Henriques, W. H. Page, N. J. Pettijohn, E. L. Epperson and W. H. Ashley.

The society continued to grow, meetings were held monthly and the membership gradually enlarged until it came to include physicians from all towns over the state.

In 1885 the name of the society was changed to New Mexico Medical Society and on December 4, a charter was granted for a period of fifty years, so there sprang into being the organization, the forty-fifth annual meeting of which we are attending here today.

In closing, I am tempted to suggest that the history of the practice of our profession in the southwest, and particularly in New Mexico, should be compiled and written in detail. Such a record would certainly prove a wholesome inspiration to all of us and those who are to follow us.

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THE NEW MEXICO MEDICAL SOCIETY Forty-fifth Annual Meeting at Carlsbad, N. M., May 9-11, 1927.

The 1927 Annual Meeting of the New Mexico Medical Society, held at Carlsbad, N. M., on May 9th and 10th, concluding with a trip to the magnificent scenic Carlsbad Caverns on May 11th, was the Forty-fifth session of that organization and one of the best and liveliest meetings of the many that have been held since its inauguration.

While it was necessary to deviate in some instances from the well prepared program, the following summary gives in detail a description of the meeting, including all sessions in the order in which they were held.

Monday, May 9th, 1927

Meeting of the Council scheduled to be held at 8 a. m., was postponed and the session was formally opened with a meeting of the House of Delegates, called to order in the Court House at 9 a. m., by the President, Dr. C. F. Beeson (Roswell).

Delegates from the various component County Societies were present, as follows:

Bernalillo County—Drs. E. C. Matthews, C. Mulky and L. B. Cohenour (Albuquerque) ;

Chaves County—Drs. C. F. Beeson and C. M. Yater (Roswell) ;

Colfax County—Dr. C. B. Elliott (Raton) ;

Dona Ana County—Dr. Dwight Allison (Las Cruces) ;

Eddy County—Dr. M. B. Culpepper (Carlsbad) ;

Report of the Secretary-Treasurer, Dr. C. M. Yater (Roswell) was submitted as follows:

House of Delegates,
New Mexico Medical Society,
Carlsbad, N. M.
Gentlemen:

I hereby render a report of the affairs of the office of secretary-treasurer for the term ending with this session:

At the last session, held Albuquerque, May 19, 20, 21, 1926, beside several members at large who stood suspended for non-payment of dues, there was one entire county society that had not rendered a report nor paid dues, consequently stood suspended; that was Santa Fe County Medical Society.

Immediately after adjournment of that session steps were taken to re-enlist these delinquent members with the result that Santa Fe County Society reinstated her entire membership of seventeen members; four of Bernalillo County Medical Society and nine members at large also reinstated, make a total of thirty reinstatements.

Although persistent efforts have been made to bring into the Society physicians in unrecognized counties, no success has been achieved.

Membership in the Society at this time is as follows:

Bernalillo county	41
Chaves county	22

Colfax county	20
Curry county	9
Dona Ana county	13
Eddy county	12
Grant county	9
Las Vegas county	7
Luna county	6
McKinley county	12
Santa Fe county	19
Union county	11
Members at large	43

Total in good standing this date.....244

There are several members who now stand suspended N. P. D., who, if proper attention is given them, will possibly reinstate before the end of the year.

Members deceased since last report, so far as reported:

Dr. W. D. Huff, Santa Rita, died May 30, 1926.

Dr. J. B. Westerfield, Clovis, died.

Dr. J. A. Van Horn, Hope, died July 22, 1926.

Dr. M. D. Taylor, Aztec, died March 16, 1927.

Dr. L. K. Patton, Santa Fe, died.

Respectfully submitted,

(Signed) C. M. YATER, Secretary."

In response to the President's call for same, no objections or requests for changes were offered, and therefore, approval of the report as read was authorized.

The financial report of the Secretary-Treasurer, Dr. C. M. Yater (Roswell) was then tendered and read, as follows:

Gentlemen:

I herewith submit report of the financial affairs of the New Mexico Medical Society for the term ending this date:

Receipts

Cash on hand last report.....	\$1,453.19
Delinquent dues for 1926, collected.....	155.00
Annual dues for 1927 collected.....	1,087.00
Check in hand, Colfax County Society.....	35.00

Total balance on hand and receipts.....\$2,730.19

Disbursements

Reporter for 1926 meeting.....	\$ 30.00
Secretary's salary, 1926.....	300.00
Treasurer's bond	5.00
Southwestern Medicine (Dues 239 members)	478.00
Stationery and supplies.....	21.00
Telegrams and legislation	16.32
Stenographer	7.00
Paid to legislative committee.....	540.60
Telegram to Dr. Pottenger.....	.30

Total disbursements

1,414.14

Balance cash in bank this date.....\$1,316.05

Outstanding Indebtedness

Southwestern Medicine (dues for 244 members for 1927)	\$448.00
Secretary's salary for 1927.....	300.00
Reporter for 1927 meeting (about)	150.00
Medical Directory from A. M. A.....	12.50

Approximately

\$920.50

Respectfully submitted,
(Signed) C. M. Yater, Secretary.

Question was raised as to whether the House of Delegates could approve this report, which had not yet been passed upon by the Council, as there had been no meeting of that body, and after discussion, motion was made, seconded and carried that

the House of Delegates approve the Secretary-Treasurer's financial report to the Council.

Dr. Dwight Allison (Las Cruces) brought up the question of a Ladies Auxiliary Society, which had been discussed, he stated, at the previous Annual Meeting, but action deferred. Dr. C. M. Yater (Roswell) reported that last year he had some correspondence with a Mrs. Bunch, of Atlanta, Ga., which he brought up at the Annual Meeting, but nothing was done about it except to refer it to the component County Societies, who had not yet responded. As there are only one or two of the County Societies with sufficient members for a Women's organization, Dr. Yater was of the opinion that it would be impossible to accomplish anything in this line. Dr. L. B. Cohenour (Albuquerque) suggested that inasmuch as he understood Mrs. P. G. Cornish, Jr., would be at the meeting Tuesday in order to take up and discuss the matter, that no action be taken at this time.

Dr. Carl Mulky (Albuquerque) explained to the members present a proposition which had been made to the members at Albuquerque in regard to group insurance, citing the rates which could be secured in event sufficient number could be induced to take out protection insurance. This brought up considerable discussion which ended with a motion, properly seconded and approved that the president appoint a committee of two, preferably from the same place, to investigate this insurance proposition, get the necessary data from insurance companies and report same to the secretary of the society, who in turn should take the matter up with the secretaries of the component societies, and make full report at the next meeting. As members of such committee, the president appointed Drs. L. B. Cohenour and Carl Mulky (Albuquerque).

The President also appointed a Committee on Necrology, composed of Drs. E. C. Matthews (Albuquerque), Dwight Allison (Las Cruces), and Carl Mulky (Albuquerque); and a Committee on Resolution of Thanks, composed of Drs. L. B. Cohenour (Albuquerque), C. W. Gerber (Las Cruces) and O. E. Brown (Tucumcari).

No further business coming before the House, the meeting adjourned at 10 a. m.

General Assembly

Promptly at 10 a. m., the session of the General Assembly was called to order by the President, Dr. C. F. Beeson (Roswell), who rapped the table vigorously with a magnificent gavel made of choice New Mex-

ico wood, expressly for this occasion, which he afterward presented to the society to show that no ill will existed despite his year of officialdom.

The spacious court-room, where perchance many offenders against the common weal have been the recipients of unpleasant Rx's compounded by judicial dispensers, presented an entirely different scene today, as physicians of note, from home and neighboring states, gathered to hear the scientific papers of their fellows and to swap ideas and views on the last word in medicine. For one must keep up-to-date in this matter of healing the sick just the same as those who are engaged in other walks of life, and the physician who has the best interests of his patients at heart is he who strives constantly to improve his knowledge, gained not only through his own experience, but also through that of his colleagues.

This thought was expressed in a measure by the Rev. John Thorns, Pastor of the Presbyterian Church of Carlsbad, who asked the invocation, expressing thanks to the almighty Father for the work and service given us to do. "We thank thee for the work of our great doctors, the work they are doing to alleviate suffering and to prolong lives and usefulness. We beseech thee, Lord, to bless this gathering, these physicians, as they meet here today and through the ensuing two days, and grant that thy wisdom may guide them in their deliberations tending to the solution of great problems, that thy work and the work of humanity may succeed throughout the land."

On behalf of the City of Carlsbad, Colonel Etienne deP. Bujac, delivered the address of welcome, it being impossible for Mayor Snow to be present at the opening exercises. The Colonel said in part:

Mr. Chairman and Gentlemen of this convention: It is a pleasure to greet you in our little town. I am sorry that our mayor has found it impossible to be present himself to extend the cordial welcome that is due, that we all feel you are entitled to, but in his behalf I want to say for the city of Carlsbad that you are welcome in our midst; we honor you; we respect you; we love you beyond all others. Anthony, over the dead body of his friend said, 'He was the noblest of them all,' and I feel I voice the sentiment of an enlightened citizenship when I say your profession is the noblest profession of all the enlightening professions, for without money and without price, without question and without hesitation, whether it be in the dead hours of the night and that night stormy and severe, if a call comes you respond to that call and render aid, and if needs be you lay down your very life for your patients. Coming into contact with deadly diseases, infections and other things that many of us attempt most ardently to avoid, you in the discharge of your professional obligations always are found ministering gently to those in pain and suffering, encouraging them to the utmost, and when no more can be done, consoling those that are left behind. It is truly

beautiful and I would I had the ability, my friends, to express the sentiments that are in my heart today in behalf of your profession. I feel what I say—I have experienced all that I speak of on the battlefields and in the civil walks of life—and I have never yet found one of you wanting. You are welcome to our town; we feel greatly honored that you are here; and I hope every one of you will receive the warm welcome you are entitled to. May God bless you in your pursuits."

Dr. L. B. Cohenour (Albuquerque) substituting for Dr. M. K. Wylder (Albuquerque), who was unable to be present, read Dr. Wylder's response, on behalf of the Society, as follows:

"Emerson is credited with having written, that, 'If a man can preach a better sermon, write a better book or build a better mouse trap than anyone else, though he build his house in the woods, the world will beat a path to his door.' During the past few years Carlsbad has had more notice and more attention from the entire world than any other city in southwest because it now has been brought to the attention of the rest of the world that you have here the biggest hole in the world. However, I would not have you think, or want you to believe, that we come here, on account, or because, of your wonderful cavern. We come here to meet with you because we have met you in our other meetings in other parts of the state and we learned to respect you, to admire you, and to love you, and it is because your good folks are here that we accepted your invitation and are here to partake of your hospitality. We come feeling fully convinced that our contact together will do us all good and that we will go home richer in experience; happier on account of our pleasant sojourn here together, and that as a result of this meeting, we will all of us be better men and better doctors."

Rev. Dr. Palmer, Pastor of the Episcopal Church of Carlsbad, in voicing the sentiments of the Eddy County Medical Society, in welcoming the visiting physicians, said in part:

"Mr. Chairman and Gentlemen of the Profession: I am very happy this morning to represent the Eddy County Medical Society. I am a great admirer of the profession in this community, and we appreciate very much having you with us. You are wondering I presume, at my peculiar garb, since I am representing the Eddy County Medical Society. The fact is I was once a medical man myself, but you know we must preach and you must practice, so I hope you will practice what I preach. It is a good thing for us to get in contact with the other and—I believe this is what I said a few years ago in a public gathering in this city—every man who belongs to your profession ought to belong to a church, or some kind of cooperative organization. We are too far apart; every man who practices medicine should be a churchman, and every church should honor the profession and the practice of medicine and surgery. And so we welcome you here because we have a desire to raise the standard—not that that standard is not high here (the men I have come in contact with are good physicians and that is what we need)—but as the story is told of the young man, fresh from medical college who came into town, hung out his shingle and was all ready to make his start. One day he met an old man on the street, who said to him, 'You are a stranger, what are you going to do here?' The young man replied 'Practice medicine.' 'Practice medicine,' the old man responded, 'we do not want any one to practice medicine, what we want and need is a good doctor.' So, if we have a meeting of medical men from the entire state,

we come in contact with others and may discuss health conditions over our state and the country and go home inspired by new knowledge and zeal. And so I welcome you in the name of the Eddy county physicians and appreciate the opportunity of extending the right hand of fellowship, being as it were, just about a brother-in-law myself to the medical profession."

Dr. Dwight Allison (Las Cruces) in response, remarked:

"There is very little I can say to express our appreciation of the warm reception tendered us by Eddy county and Carlsbad. I hope by our conduct and our meetings that we can show the people of this town and this county what our aims are and what our future aims are. We all know we are glad to be in this part of the country. You have some of the scenic wonders of the world here, but it is not for that we come here. We come to study our profession, to get together, to get to know each other better and we hope by our actions that we will impress upon the citizens of this part of the state what the medical profession means to each and every individual here. So on behalf of the state society of New Mexico, I thank you for this invitation.

President-elect Dr. C. B. Elliott (Raton) was here carefully escorted to the platform by Dr. M. B. Culpepper (Carlsbad) and introduced by Dr. Beeson, who presented him with the gavel, to be handed down from President to President.

Dr. Elliott's Address, entitled "Pioneers in the Medical History of New Mexico," was then delivered (published elsewhere, this issue), depicting many interesting features in connection with the progress of medical science in the State, with a description of the early "medicine-man" and a "Who's Who" summary, which showed that among prominent physicians who have resided in New Mexico, Dr. E. R. Squibb, Janeway and Dr. Roberts Bartholow were practitioners at Fort Union, in their younger days.

After the President's Address, the meeting was adjourned for luncheon.

Afternoon Session, May 9th

The afternoon scientific session was called to order at 1 p. m. by the President, Dr. C. B. Elliott (Raton), the first paper presented being that of Dr. F. D. Vickers (Deming) on "Artificial Pneumothorax," with x-ray illustrations. Dr. Vickers, who is Medical Director of the Holy Cross Sanatorium, emphasized that his talk was not for the doctor who is expert in giving pneumothorax, but for the general practitioner who does not pay much attention to this method of treatment. He advised that when the commonly accepted method of treatment by rest, fresh air, good food and general management failed, and the patient is doing badly, to think of pneumothorax, which, he maintained, has really not had a fair trial because it has generally been given only as a last resort and when too late. In

cases where the lesions are largely one-sided and not doing well, pneumothorax should be tried fairly early and in such cases, the results are usually good.

Discussion was opened by Dr. Carl Mulky (Albuquerque), who deplored the fact that this form of treatment was usually confined to the hopeless type, and predicted that better results would ensue if it were tried earlier.

Dr. H. H. Latson (Amarillo, Texas), without entering into the discussion, told of a morphine addict who would inject air direct into the veins, using a medicine dropper for the purpose.

Dr. Felix P. Miller (El Paso, Texas), President-Elect, Texas State Medical Association, continuing the discussion, advised that he had no doubt whatever as to the future value of artificial pneumothorax, which, he affirmed, has already proven its value not only when given early, but also in a number of old practically hopeless cases. Dr. Miller described various cases in which he had secured good results, citing the technic employed.

Dr. Vickers had nothing further to add and the discussion was, therefore, closed.

The next paper presented was that of Dr. A. C. Scott (Temple, Texas), entitled "High Mortality in Malignancies and its Reduction." Dr. Scott, President of the Scott and White Hospital at Temple, and a noted authority on the cancer problem, explained different phases of the subject, citing reasons for the apparent high mortality in malignancies, and told how this is being reduced, stressing cautery excision in early operation.

Discussion was opened by Dr. Felix P. Miller (El Paso), who stated that he was a convert to cautery excision for malignancy largely through close association with Dr. Scott, and that because of it, in his opinion, there is not much more in sight at this time for the surgeon to do in the matter of mortality reduction, that it rather depended largely upon education of the public and earlier diagnosis.

Dr. F. D. Vickers (Deming) cited several cases, stressing the importance of early correct diagnosis to insure mortality reduction.

Dr. K. D. Lynch (El Paso, Texas), expressed his approval of cautery treatment in cancer cases, stating that genito-urinary cancers present one of the most hopeless types and that the best results are the cases that stay cured the longest are those that have been treated with cautery, referring to Dr. Percy's work along this line.

In closing the discussion, Dr. Scott ex-

plained where he obtained his ideas of using cautery and of the advancement and perfection of this method of treatment. Dr. Scott stated that in his opinion heredity played no part in cancer, except perchance through moles or birth-marks.

Dr. G. Werley (El Paso, Texas), set forth in a very interesting way "Some Clinical Aspects of Congenital Heart Disease," stating that congenital heart disease is not infrequent, that congenital heart lesions are nearly all due to arrest of development at some point of the heart's evolution through the stages of ancestral types. "It is not a question of heredity," Dr. Werley explained, "as there are many records of twins, one with a congenital heart lesion, the other normal in every way." Illustrated by lantern slides, a number of cases were followed, the point being brought out that congenital heart disease gives rise to some abnormal change in the electrocardiogram in 97 per cent of all cases.

There seemed a lack of alacrity to discuss this fine paper, no one venturing comment, until at last Dr. C. M. Yater (Roswell) arose and remarked that the boys at Roswell, when case reports along this line had been studied at the Society meetings, had been knocked over by the P wave, swept off their feet by the Q, R and S waves, literally swamped by the T wave and later sunk by the inverted T wave, and he knew that many of those present as well as he himself would like further information as to the meaning of those terms, that they would like to know in plain English just what they meant.

No further comment arising, Dr. Werley explained that the different waves were really very simple and very easy to read with a little experience: that the first wave is a rather small one, then there is a little space, then it shoots high up, then goes below the line, then straight for awhile and then back again, and this simple little thing is the T wave. The little wave found first is the P wave, which is made up by the action of the aorta.

(Complete explanation will be given with the discussion when this paper is published in a future number of the Journal.)

The concluding paper of the day was that of Dr. M. Pollak (Fort Bayard), entitled "Climatic Treatment of Tuberculosis—A Plea for a Tuberculosis Survey," in which Dr. Pollak laid emphasis on the role the wonderful climate of the Southwest plays in the treatment of tuberculosis, yet that no matter how firmly the medical profession of the Southwest believes in the great value of climatic treatment in tuberculosis,

it still owes to the great medical world of the country the substantiation of its convictions with entirely unbiased scientific facts, which would be convincing enough for the opponents of climatic treatment. Dr. Pollak advanced various ways by which the empirical experience of the Southwestern profession might be substantiated.

Discussion was opened by Dr. Dwight Allison (Las Cruces) who cited the fact that a survey of the country made some few years ago showed that Colorado was second in the tuberculosis death rate in the United States. This was due to various factors, but it was afterward proven that simply by eliminating the persons who came to Colorado originally with tuberculosis, the State ranked next to last in the death rate for that disease.

Dr. V. D. Vickers (Deming) arose to remark on the value of climate as an aid in the treatment of tuberculosis, deploring the fact, however, that this was frequently outweighed by the financial condition of the patient, which would not permit him to refrain from work. The doctor suggested that institutions in the Southwest, endowed by wealthy philanthropists, would be a step in the right direction.

Dr. G. Werley (El Paso, Texas), told of observations made a number of years ago in El Paso which showed that there was very little tuberculosis developed there among the native American population, citing this as the best evidence as to the value of climate. He also described the post-mortem condition of lungs of tuberculous persons who recently died after a residence of twenty or twenty-five years in the Southwest, to which they had originally come with tuberculosis far advanced.

Dr. F. P. Miller (El Paso, Texas), stated that he felt there has not been enough research work done in the Southwest to show the value of climate, and spoke at considerable length as to the necessity for proper institutions for the treatment of the indigenous tuberculosis cases drifting throughout the country, who, if given proper attention in incipency would have health and usefulness restored.

Dr. Pollak in closing the discussion, reiterated the statement made in his paper that scientific facts must be produced in order to convince the people back east as to the value of climate in the treatment of tuberculosis.

Morning Session, May 10, 1927

The first feature of the morning session on May 10th was a discourse by Dr. F. M. Pottenger, Monrovia, Cal., on "Present-Day

Conception of Clinical Pulmonary Tuberculosis."

Dr. Pottenger graphically depicted the present day conceptions of clinical pulmonary tuberculosis, showing by lantern slides the progress of selected cases, holding his audience spellbound as he described the various phases of the disease and the methods undertaken to restore patients to health and usefulness.

Discussion was opened by Dr. Carl Mulky (Albuquerque), who complimented Dr. Pottenger very highly on his excellent address, which he considered very educational to the physician as well as to the public.

Dr. F. P. Miller (El Paso, Texas), also paid tribute to Dr. Pottenger's meritorious presentation of the subject and stressed the importance of careful physical examination when patients come complaining of colds, loss of "pep," etc., in order that tuberculosis might be detected in its incipiency.

Dr. L. S. Johnson (Columbus) advised the general practitioner who is not prepared to make thorough chest examinations not to hold on to the patient but to refer him to a competent chest man, if any doubt existed in his mind as to the diagnosis.

Dr. M. Pollak (Fort Bayard) stated that frequently a case with only a small lesion would produce more symptoms than one with extensive lesions, and that if we looked upon tuberculosis as a systemic rather than a localized disease, we would understand the symptoms much better than from a pathological standpoint alone.

Dr. Pottenger in closing the discussion thanked the Society for the opportunity to appear before it and spoke of the value of tuberculin in the treatment of tuberculosis when properly used by experts.

Dr. Carl Mulky (Albuquerque) presented a paper entitled "Hilum Tuberculosis in Adults," setting forth that this disease usually manifests itself before the age of thirty-five and is apparently more frequent in females than in males, possibly because the more highly sensitive nervous system of females causes them to re-act to slighter toxemias than males. Dr. Mulky stated that the diagnosis is a difficult one to substantiate as it rests mainly on symptoms and that while physical signs and x-ray findings are corroborative, they give no information as to the activity of the lesions.

Discussion was opened by Dr. F. D. Vickers (Deming), who told of experiments being worked out with guinea pigs and rabbits, which would have an important bearing on this subject.

"Non-calculous Ureteral Obstruction" was

the title of a paper read by Dr. K. D. Lynch (El Paso, Texas), who demonstrated with lantern slides certain conditions which are met with in the ureter, which may produce symptoms simulating a typical reno-ureteral colic due to stone and may result in serious changes in the kidney and ureter unless proper treatment is instituted early in the disease.

Discussion was opened by Dr. P. G. Cornish, Jr. (Albuquerque), who spoke of the frequency with which diagnosis of chronic appendicitis is made and the appendix removed without relief of symptoms, which later are discovered to be the conditions described by Dr. Lynch.

Dr. H. A. Ingalls (Roswell) asked Dr. Lynch to explain when there is a definite stricture of the ureter.

Dr. Lynch in closing stated that in stricture of the ureter, the patient may not get any signs of trouble for a long time, and yet, let him take a few drinks of liquor, and it comes on at once. Dr. Lynch cited a case recently referred to him by Dr. Ingalls, in which a former x-ray apparently showed a definite stone shadow in the kidney. On careful checking, he was unable to locate the shadow and made a final diagnosis of obstruction due to aberrant blood vessels, which was the finding at operation.

Afternoon Session, May 10, 1927.

Meeting of the House of Delegates— Election of Officers.

At 1:30 p. m., a meeting of the House of Delegates was called to order by the President, Dr. C. B. Elliott.

Roll call was answered by the following Delegates:

Bernalillo County—Drs. P. G. Cornish, Jr.; Dr. Carl Mulky, E. C. Matthews, L. B. Cohenour.

Chaves County—Dr. R. L. Bradley, Dr. C. F. Beeson, Dr. C. M. Yater.

Colfax County—Dr. C. B. Elliott, Dr. T. P. Lyon.

Dona Ana County—Dr. C. W. Gerber.

Eddy County—Dr. H. A. Stroup.

Luna County—Dr. F. D. Vickers.

Santa Fe County—Dr. G. S. Luckett, Dr. D. B. Williams.

Curry County—Dr. H. A. Miller.

Fraternal Delegate from Texas—Dr. F. P. Miller.

After reading and approval of the minutes of the last meeting, election of officers was declared in order and nominations were requested for the office of President.

Dr. W. T. Joyner (Roswell) in a choice speech nominated as President, Dr. T. P. Martin, of Taos, subject, however, to the

unanimous vote of the House, which was necessary owing to the absence of Dr. Martin from the meeting, a section of the By-Laws making this action imperative. Dr. Beeson explained that it had been Dr. Martin's intention to be present, but the severe storms prevalent in his part of the country the past two days had probably detained him.

Dr. H. A. Miller (Clovis) made motion that the By-Laws be suspended in this instance and that Dr. Martin be unanimously elected as President for the ensuing year, which was seconded and carried.

The following table lists the newly elected officers for the ensuing year:

President-Elect, Dr. T. P. Martin, Taos.

Vice President, Dr. F. D. Vickers, Deming.

Members of Board of Managers of Southwestern Medicine: Present incumbents—Dr. C. F. Beeson, Roswell, re-elected; Dr. H. A. Miller, Clovis.

Secretary-Treasurer, Dr. L. B. Cohenour (Albuquerque).

Councilors for Three Years—Dr. W. T. Joyner (Roswell); Dr. H. A. Miller (Clovis).

Councilor to fill unexpired term of Dr. J. R. Scott, who has left the State—Dr. Carl Mulkv (Albuquerque).

With regard to the meeting place for 1928, Dr. P. G. Cornish, Jr., extended invitation for the Society to meet at Albuquerque. Dr. W. T. Joyner (Roswell) produced and read a telegram received from Dr. T. P. Martin, Taos, inviting the Society to meet at that place.

Motion was made, seconded and carried by decisive vote that the next annual meeting be held at Albuquerque, with the understanding that a future meeting would be held at Taos.

Regret was voiced at the contemplated departure from the state of Dr. C. M. Yater, who has served so faithfully and efficiently as Secretary-Treasurer of the Society for the past four years, and a vote of thanks was extended to him.

No further business coming before the House, adjournment followed at 2:30 p. m.

Meeting of the Council

Immediately following the meeting of the House of Delegates, a meeting of the Council was called to order by the President, Dr. C. B. Elliott (Raton). The following members were present: Dr. C. B. Elliott (Raton); Dr. C. M. Yater (Roswell); Dr. H. A. Miller (Clovis); Dr. Carl Mulky (Albuquerque); Dr. W. T. Joyner (Roswell); Dr. F. D. Vickers (Deming).

The reports of the Secretary-Treasurer were read and approved.

Motion was made, seconded and carried that the Secretary-Treasurer be authorized to settle all outstanding indebtedness, except a new medical directory which had not yet been delivered.

The question was raised as to possible bills from the moving picture show house where the motion slides were shown in connection with those papers which were illustrated, and motion made, seconded and approved that any such bills, which would probably not exceed three dollars in total amount, be paid by the Secretary-Treasurer.

No further business coming before the Council, the meeting was adjourned at 2:45 p. m.

General Assembly

At the concluding scientific session, a paper prepared by Drs. C. P. and W. L. Brown of El Paso, Texas, was read by Dr. K. D. Lynch (El Paso), as it was impossible for the Drs. Brown to be present. This paper, entitled "A Plea for More General Post-operative Use of the Duodenal Tube," set forth the advantages derived by its use, in that it relieves conditions due to gas and regurgitated intestinal fluids; effects interrupted or continuous lavage of the stomach, and, in some cases of the duodenum; gives relief from nausea; makes possible the free drinking of water; permits trans-gastric feeding; relieves toxemia; is a port of entry for all kinds of medication, and last but not least, improves the feelings of the patients.

In discussing this paper, Dr. P. G. Cornish, Jr., (Albuquerque), also recommended use of the duodenal tube, stating that it was apt to be overlooked in the treatment of post-operative cases because it was so simple and such a small thing that it might easily escape the mind of the surgeon.

Dr. W. T. Joyner (Roswell) spoke on the subject of medical legislation in New Mexico, recounting the difficulties encountered in this respect and stating the work would be continued this year, though he was not very optimistic as to the outlook.

Dr. H. A. Miller (Clovis) also spoke along these lines, affirming Dr. Joyner's remarks as to the impossibility of accomplishing anything at the present time.

Dr. J. J. Crume (Amarillo, Texas), in a short speech stated that he had enjoyed the meeting very much and especially the papers relating to tuberculosis.

Report of the House of Delegates was

then read, with account of the election of officers.

The Committee on Necrology reported with the following Resolution:

The New Mexico Medical Society notes, with deepest regret the passing from life of the following:

Dr. W. D. Huff, Santa Rita, N. M.
Dr. J. B. Westerfield, Clovis, N. M.
Dr. J. A. Van Horn, Hope, N. M.
Dr. M. D. Taylor, Aztec, N. M.
Dr. L. K. Patton, Santa Fe, N. M.

The secretary of this society is directed to convey to the members of the families of the deceased, our heartfelt sympathy and an assurance of the respect in which their memory is held.

Motion was made, seconded and approved that the Secretary be instructed to forward copies of the Resolution to the families of the deceased.

Report of the Committee on Resolution of Thanks was tendered as followed:

Whereas, the New Mexico Medical Society in annual session at Carlsbad, N. M., May 9-11 inclusive, has had a most interesting, pleasant and profitable meet, Be It Resolved that the thanks of this organization be extended to the Eddy County Medical Society, Eddy County, the City of Carlsbad, and to Mr. Linn, of Linn's theatre.

Motion was made, seconded and approved that the report be accepted, the committee discharged and the secretary instructed to forward copies of the resolution to the proper persons.

Dr. G. S. Luckett, State Health Officer, Santa Fe, announced that Dr. M. A. Barber of the United States Public Health Service would be detailed to New Mexico in June or July to do some special work on malaria, and he would like to have a medical student to help him out. Dr. Luckett explained that there would be no salary attached and the student would be called upon to defray his own expenses, but it would be a wonderful opportunity for a young man to be associated with an expert on malarial work.

Dr. C. M. Yater (Roswell) expressed his pleasure at having been connected with the Society as Secretary-Treasurer for the past four years, and his regret at severing his relations, owing to his removal to Cleburne, Texas. Dr. Yater said that he had learned to love the profession in New Mexico, that he loved every doctor in the society, and greatly appreciated the co-operation which had been given him during his terms of office. "I am sure," continued Dr. Yater, "that I am leaving a man in my place who will no doubt give you better service than I have, as he is a younger man than I am, gets around better and has more pep than I have. Dr. Cohenour will make you a good secretary; he has been secretary of the Bernalillo County Society ever since I have

been secretary of this Society, and he has always been very prompt in answering my letters to him upon any subject—and that is saying a whole lot more than I can say about some of you."

The President, Dr. Elliott, thanked Dr. Yater for his faithful service and expressed the regret of the members at his departure from the State.

Adjournment sine die at 4:15 p. m.

Among those in attendance were:

Drs. C. M. Yater, Roswell; R. J. Boatman, Carlsbad; C. F. Beeson, Roswell; O. E. Brown, Tucumcari; M. B. Culpepper, Carlsbad; Cary B. Elliott, Raton; Dwight Allison, Las Cruces; C. W. Gerber, Las Cruces; O. E. Puckett, Carlsbad; E. C. Matthews, Albuquerque; Carl Mulky, Albuquerque; L. B. Cohenour, Albuquerque; W. F. Glasier, Carlsbad; D. B. Williams, Santa Fe; G. A. McAlmon, El Paso; L. H. Pate, Carlsbad; Julian A. Moore, Wilmington, N. C.; W. M. Lancaster, Clovis; M. Pollak, Fort Bayard; F. O. Vickers, Deming; A. C. Scott, Temple, Texas; Neal Wright, Lubbock, Texas; G. Werley, El Paso; A. A. Deardoff, Lovington; E. B. Lyon, Raton; N. F. Wollard, Portales; L. S. Johnston, Columbus; E. M. Fisher, Roswell; B. Bradley, Roswell; W. T. Joyner, Roswell; F. F. Doepp, Carlsbad; Felix P. Miller, El Paso; K. D. Lynch, El Paso; H. A. Ingalls, Roswell; G. S. Luckett, Santa Fe; H. A. Stroup, Artesia; H. H. Latson, Amarillo, Texas; J. J. Crume, Amarillo, Texas; D. D. Swearingen, Roswell; H. A. Miller, Clovis; C. C. Meacham, Albuquerque; W. W. Phillips, Roswell; H. V. Fall, Roswell; P. G. Cornish, Jr., Albuquerque; W. G. Hope, Albuquerque; G. A. Miller, Vaughn; F. M. Pottenger, Monrovia, Cal.

The annual banquet was held on the evening of the 10th, and was well attended by the members and their wives, proving a thoroughly enjoyable occasion.

The majority of the members stayed over until Wednesday to take a trip to the Cañon. It would seem a sacrilege to attempt to describe this magnificent scenic wonder. Words are entirely inadequate to express its grandeur. Certainly none of the party failed to enjoy the visit and all were deeply impressed with the beauty and vastness of the cavern.

TEXAS STATE MEDICAL MEETING IN EL PASO

Tuberculosis was featured by the Texas State Medical Association, in its Annual Session in El Paso, April 26 to 28. The Committee on Scientific Work, under the direction of its chairman, Dr. A. C. Scott, of Temple, prepared the programs of the sections in such a way that comprehensive and connected symposia on many phases of tuberculosis were presented.

It will interest his many friends in the

Southwest to know that Dr. Felix P. Miller, of El Paso, was chosen President-Elect of the Texas State Medical Association at the El Paso session. This is a signal honor to El Paso as well as to Dr. Miller, as this is the first time the far west of the state has been honored by this Association. When Dr. Miller is seated as president, a year hence, he will not enter the administration of that high office without experience. For twenty-seven years he has been active in organized medicine in the state of Texas. He was Chairman of the Board of Medical Defense at the time of his election and has otherwise served that board since the adoption of medical defense by the Association in 1916. He has served as Councilor from the El Paso district and has had a continuous seat in the House of Delegates for a number of years, either by election or by virtue of his positions as Councilor or member of the Medical Defense Board. He has also served as president of the El Paso County Medical Society and chief-of-staff of the Masonic Hospital. He is a Fellow of the American Medical Association and the American College of Surgeons.

Another service stripe was given El Paso as the convention city, for the entertainment of the thousand visitors present for this convention. El Paso's proximity to Mexico is largely responsible for her success in this direction. Alumni dinners and private ones featured the first evening. The second day Dr. W. L. Brown's Entertainment Committee gave a barbecue in Juarez and the thousand guests were fed, watered and black bottomed until the hour for the president's ball at Hotel Orndorff. So well did the Ladies' Auxiliary function in entertaining visiting ladies with lawn parties, luncheons and receptions that the House of Delegates voted members of the Auxiliary into membership in the State Association. No longer will the ladies wear the "Visitor" badge, but the "Member" badge instead.

It has been repeatedly said that the best and most instructive scientific sessions of the State Association are those held in El Paso. A regular attendant gave as the reason that El Paso is so far removed from the other centers of the state that when distinguished members and guests attend they remain for the entire session and as a consequence there is lively and instructive discussion of every paper.

Distinguished guests who addressed the Association were: Dr. Donald C. Balfour of Rochester, Minn., "The Incidence and Treatment of the Complications of Duodenal Ul-

cer;" Dr. Karl A. Menninger of Topeka, Kansas, "Suicides," and again before the General Session on "Mental Aspects of Tuberculosis;" Dr. Stuart Prichard, Battle Creek, Mich., "New Points in Bronchiectasis;" Dr. F. H. Falls, Chicago, "Occipito-Posterior Positions;" Dr. C. G. Sutherland, Rochester, Minn., "Significance of Infiltration of the Lung," and Dr. W. A. Evans, Chicago, "What Next in Consumption?"

The following papers indicate the extent to which tuberculosis was featured in this meeting: "The Use of the Plaster Shell in Spinal Tuberculosis," Dr. V. H. Keiller, Galveston; "Bone and Joint Tuberculosis," Drs. W. B. Carroll and Sim Driver, Dallas; "Tuberculosis, Its Management and Prevention," Dr. Livingston Anderson, Austin; "Bovine Tuberculosis," Dr. W. A. King, San Antonio; "Avulsion of the Phrenic Nerve," Dr. Felix P. Miller, El Paso; "Tuberculosis of the Bones and Joints, Radiological Diagnosis," Dr. Roy G. Giles, Temple; "Surgical Treatment of Tuberculosis of Bones and Joints," Dr. E. J. Cummins, El Paso; "Sunlight and Artificial Light Therapy in Tuberculosis," Dr. Orville Egbert, El Paso; "First Infections and Reinfections in Pulmonary Tuberculosis," Dr. G. T. Caldwell, Dallas; "Radiologic Diagnosis of Pulmonary Tuberculosis," Dr. Charles L. Martin, Dallas; "Incipient Tuberculosis," Dr. Henry Winans, Dallas; "New Points in Bronchiectasis," Dr. Stuart Prichard, Battle Creek, Mich.; "Bronchiectasis," Dr. Tom Bond, Ft. Worth; "Intestinal Tuberculosis," Dr. E. V. Powell, Dallas; "Pregnancy as a Complication of Tuberculosis," Dr. George Bethel, Austin; "The Value of Sunshine," Dr. Orville Egbert, El Paso; "The Advantages of Climate in Tuberculosis Hospitalization," Col. M. A. W. Shockley, U. S. A. William Beaumont General Hospital, El Paso; "A Practical Consideration of Time as a Factor in the Successful Treatment and Complete Recovery from Pulmonary Tuberculosis," Dr. S. E. Thompson, Kerrville; "Spontaneous Pneumothorax in Apparently Healthy Persons," "Phenomena Resulting from Pulmonary Tuberculosis," Dr. C. M. Hendricks, El Paso; "The Erythrocyte Sedimentation Rate in Pulmonary Tuberculosis," Drs. H. Phil Hill, C. J. Koerth, and R. G. McCorkle, San Antonio; "The Early Diagnosis of Pulmonary Tuberculosis," Dr. R. B. Walker, Sanatorium; "Tuberculosis in Children," Dr. Robert M. Barton, Dallas.

REPORT OF COMMITTEE ON NECROLOGY

Arizona State Medical Association.
Yuma, Arizona, April 23, 1927.

The past year has been the most disastrous to the membership of this Association in its history. This is true not only in the number lost (eight), but because of their prominence and activities in the Association. Our loss includes two charter members; four who have practiced in Arizona from twenty-five to forty-five years; and two who were comparatively new-comers.

In the passing of each of these fellow-members we mourn not only a professional brother but a personal friend; and we extend to the families of our deceased members our deepest sympathy in their irreparable loss.

DR. ANCIL MARTIN

Shortly after the annual meeting of last year, Dr. Ancil Martin, of Phoenix, died of acute nephritis. For some twelve or fifteen years following his arrival in Phoenix in 1891, he was the only specialist in eye, ear, nose and throat diseases in Arizona. He was one of the organizers of this Association, and was its third president. Undoubtedly he had contributed a larger number of able papers, usually upon various phases of his specialty, than has any other member.

During the last year of his life the fact was established that he had presented the first description, with a case, of tularemia on record, this occurring in 1902, long before the present name had been thought of.

In quite a variety of lines Dr. Martin rendered valiant service for the state, among which may be mentioned: by assistance in drafting the first Medical Practice Act in the state; by his long and painstaking work as secretary of the Board of Medical Examiners; during the war, as chairman of the Advisory Board of Maricopa County and as chairman of the Medical Council for Arizona.

As an upright man, as a loyal and progressive citizen of the state, and as an intelligent and skilled physician, he was outstanding. In fact, he had no equal in the membership of this Association.

DR. L. D. DAMERON

Only last month, in Dr. L. D. Dameron, this Association lost another charter member, who had resided in Phoenix just about as long as Dr. Martin. He married the daughter of Dr. H. A. Hughes, the only present surviving charter member in Arizona. For the first five years of its exist-

ence Dr. Dameron was the efficient secretary of this Association.

With the exception of two years, somewhat recently, when he was incapacitated from professional work by a stroke of apoplexy, during this long period he has been a conspicuous physician and citizen of Phoenix. He served many years as health officer of the city and rendered valuable service to his community by a long and successful term as a member of the school board.

His high character, his honorable career as a physician and his Christian citizenship brought him innumerable friends. In all probability no member of this Association has ever won both the respect and affection of the people as did Dr. Dameron.

DR. B. G. FOX

On February 12, 1927, occurred the death of Dr. B. G. Fox, who had practiced in Globe for thirty-five years. He early established the reputation of being a conscientious and able physician. In earlier days he was quite prominent in the affairs of this Association. He had the distinction of holding the position of health officer ever since the incorporation of Globe. For several years he was joint city and county health officer.

During all these years he was justly much beloved by the people of his vicinity.

DR. CHARLES L. EDMUNDSON

Dr. Chas. L. Edmundson had long been a resident of Arizona; in fact, he was one of the first physicians in charge of the Calumet & Arizona Hospital at Bisbee. Except for a few years spent in California, he continued as a member of the hospital staff till the time of his death on April 15, 1927. In earlier days he was mayor of the city of Bisbee, and he also served as a member of the school board.

He had a deep appreciation of his responsibility to those requiring his services. The night was never too dark nor the mountain too high for him to answer a sick call. His love and sympathy were nearly divine.

DR. CHARLES F. HAWLEY

Early in the past year occurred the death of Dr. Charles F. Hawley from chronic nephritis.

After a short residence in Phoenix and Mesa, he practiced in Bisbee for some twenty years. During this time he was quite active in his county society, holding the office of president for one year. For several years he was a member of the Arizona Board of Medical Examiners, representing the homeopathic school on this board.

Dr. Hawley was much beloved by his fellow practitioners and countless of his former patients will long mourn his loss.

DR. H. W. PURDY

During the last few months the medical profession of the state has lost its real pioneer, at least, the man who had practiced continuously in Arizona, presumably, for a greater number of years than any other member, namely, Dr. H. W. Purdy, of Nogales.

Soon after his graduation in New York in 1882, he came to Arizona to be physician to the (then) famous "Silver King" mine. For thirty years he has practiced in Nogales. While not very well known to many of this Association, yet his intimate associates insist that he possessed exceptional professional qualities; that he was most self-sacrificing in his labors for the welfare and relief of his fellowmen and that he was prominent in the civic life of his community. They add: "The medical profession has lost one of its foremost and able members."

DR. JAMES A. OLLERTON

This Association mourns the loss of one of its youngest members, Dr. James A. Ollerton, who died only two years after his graduation. This untimely death was due to fulminating typhoid fever of two weeks' duration. He had practiced at Mesa, where he was city health commissioner.

His demonstrated ability and faithful attention to duty had very rapidly established him in his profession. He had the high esteem of his medical associates.

DR. P. B. NEWCOMB

Only two hours before the appointment of this committee, Pima County Medical Society lost its efficient Secretary, Dr. P. B. Newcomb. Thorough preparation for, and extensive experience in, his chosen specialty—pathology—gave him high standing in the profession wherever he was known.

During the few years he had conducted a laboratory in Tucson, he had not only become an important factor in the professional life of that vicinity, but he had also left his impress upon this association by the number of high-class scientific papers he had contributed.

Every one had the highest respect for Dr. Newcomb's attainments. This Association had no more able member.

W. V. WHITMORE,
Chairman.

J. I. BUTLER,
H. A. REESE,
V. A. SMELKER.

REPORT OF THE RETIRING PRESIDENT of the ARIZONA STATE MEDICAL ASSOCIATION.

The new Constitution and By-laws, adopted by the Arizona State Medical Association at its last meeting in Yuma, called for a report of the outgoing President.

It was recognized by the committee appointed to draft this constitution that nowhere was there provided an opportunity for the State Association to learn of the activities of the society during the interim between State meetings.

It was therefore considered advantageous to have the outgoing President give a brief account of the Association's activities during his term of office.

Although this change did not contemplate a report this year, I consider that certain activities of this society and your outgoing President would be of value and interest and I, therefore, will state them briefly.

In July and August, 1926, while the President was in Europe, very important meetings of delegates from various county societies were held in Phoenix, resulting in the adoption of the excellent fee schedule adopted by the Arizona Industrial Commission.

I consider this agreement between the Commission and the delegates of the State Medical Association to be one of the most constructive pieces of work ever accomplished by the medical men of this state. We not only have a good, fair, workable schedule, but have the good will of the Commission and an expressed desire of the Commission to work in harmony with the State Medical Association.

In December, 1926, a movement was started to pass through the State Legislature a Basic Science bill. It was considered by the legislative committee and your President that the time was opportune and the conditions favorable for such a bill. Had it not been for the bitter and rather unexpected split between the government forces and their opponents, it is quite likely that the bill would have passed.

Your President made three trips to Phoenix in the interest of this bill besides writing numerous letters and sending many telegrams.

The committee on legislation, of which Dr. W. O. Sweek was chairman, worked with untiring efforts to put this bill through.

We were given very strong support by Dr. Franklin Martin, Director General of

the American College of Surgeons, who toured the state in the interests of this bill. I believe the medical profession should not give up this fight.

This, or a similar bill should be introduced again, when this state has a harmonious government and we as an association should be better organized for its passage.

I wish to congratulate your President, Charles S. Vivian, on the excellent program provided for the State Association meeting in Yuma April 21st to 23rd inclusive. To my mind this was the finest program ever given this association.

Your President wishes to take this opportunity to thank all associated officers and committees for their loyal support during his tenure of office.

GEORGE A. BRIDGE.
Retiring President.

CASE REPORT

G. WERLEY, M. D., El Paso, Texas

Man, aged 45 yrs., came complaining of heart disease. His health had broken down several times: first, in 1921, in Chicago, when x-ray showed the heart enlarged. He was dropsical, was given an iron tonic and recovered. In 1923, he broke down again and was sent to Albuquerque as tuberculous. He then was edematous, dyspneic, and very pale. He improved rapidly and was soon able to climb mountains and walk many miles.

I saw him first about Jan. 1, 1927. He was again in the same condition as on the two previous occasions. He was short of breath, had palpitation, and on walking there was pain and tightness about the chest, with aching in the arms. He was taking ten drops of digitalis three times a day without benefit.

He was badly injured in an auto accident in 1914. He never had rheumatism nor chorea. He is a man of good habits and denies venereal disease.

On examination the skin and mucous membranes were very pale. The face and whole body were edematous and the belly one-third full of fluid. The spleen was large and easily felt and seemed rather hard. The liver could not be felt. The blood pressure was 156 to 160. Heart rate 74. The apex of the heart was in the fifth interspace 8 cm. from the midline. There was a systolic murmur at the apex. The urine showed no albumin nor sugar, and there was no nocturia.

Blood count on Jan. 7th by Dr. Waite: Reds 2,560,000; hgb. 25 per cent; whites

2100, polys 60 per cent, small monos 36 per cent, large, two per cent, eosin two per cent. No nucleated reds. Marked poikilocytosis. Wassermann negative.

He was put on Blaud's pills and has improved very rapidly. Jan. 22, his hemoglobin was 40 per cent and he now looks and feels perfectly well. He has climbed Mt. Franklin without fatigue.

Diagnosis: Splenic anemia. He has been advised to have his spleen removed. Such periods of recovery are characteristic of splenic anemia, and operation should be done now while his condition is good.

SOUTHWESTERN MEETING IN NOVEMBER IN EL PASO.

A great program is in course of preparation for the November meeting of the Southwestern Association. Dr. Hugh W. Crouse has been appointed Chairman of the Committee on General Program and with his characteristic originality and enthusiasm, has laid plans for a meeting which will eclipse anything ever before held in the Southwest. Discarding all stereotyped plans, it is his purpose to have a "Clinic Week," with clinicians, surgeons and specialists of national standing to come to El Paso and give clinical instruction by demonstrations, lectures and clinics during the period of the meeting. Those who attended the meeting in El Paso two years ago will recall the clinic by Dr. Musser on diabetes; that is a sample of the kind of program which Dr. Crouse expects to have through the entire period of our meeting.

The number of papers will be limited to those who have some definite presentation of value to make. Members of the Association in New Mexico and Arizona who desire to present papers at this meeting should communicate with Dr. Hugh Crouse, Roberts-Banner Bldg., El Paso, as early as possible.

The meeting dates have been set for November 3, 4 and 5. Suggestion has been made to Dr. Willis W. Waite, President of the Association, that a four day meeting, with such a program as that proposed, would be very welcome to the members of the Association.

SITUATIONS WANTED

WANTED—Salaried appointments for Class A Physicians in all branches of the Medical Profession. Let us put you in touch with the best man for your opening. Our nation-wide connections enable us to give superior service. Aznoe's National Physicians' Exchange, 30 North Michigan, Chicago. Established 1896. Member The Chicago Association of Commerce.

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DR. C. M. YATER, Roswell, New Mexico.....	Associate Editor
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DR. W. WARNER WATKINS.....	Phoenix

GLANDULAR FEVER OR INFECTIOUS MONONUCLEOSIS

The discussion at the monthly staff meeting of St. Joseph's Hospital, Phoenix, on May 9th, brought out the fact that there has been an epidemic of the condition known as glandular fever in Maricopa County. Also, that the condition had been recognized by only a few of the physicians, most of them confusing it with adenitis from throat infection or with German measles.

The symptoms are those seen in the onset of many acute infections; malaise, fever, usually one or more chills, general aching over the body; nausea and sore throat occur in about half the cases. Enlarged and tender lymph glands, usually the postauricular and cervical glands, with sometimes a general glandular enlargement is a characteristic symptom.

The most characteristic finding, next to the enlarged glands, is the high mononuclear count, with a total increase in the white count in the early stages of the disease; this leucocytosis may soon disappear, though the mononucleosis persists longer, gradually disappearing during convalescence. This mononuclear percentage ranges from fifty to ninety-eight. Most of the clinicians present had seen cases whose clinical picture corresponded with this disease. In very few instances had blood counts been made. One patient who came to the hospital for tonsillectomy showed leucocytosis with mononuclear percentage of 73 to 90 in three counts. Dr. Beauchamp recalled an epidemic of what was called glandular fever in Phoenix twenty years ago. (See review in this issue.)

WEEKLY FIVE MINUTE MEDICAL RADIO TALKS

The Arizona State Medical Association in conjunction with the Maricopa County Medical Society, are sponsoring weekly five minute addresses every Thursday evening at 7 o'clock.

A committee of three members of the two societies are in direct charge of the programs. The greater part of the work in the preparation of the talks is carried out by the committee; it has been, and is still, hoped that various members of the society will assist in preparing subject matter for the addresses. As it requires a great deal of experience to properly prepare a five minute dissertation, it should be expected that the committee will freely revise all manuscripts. The names of the committee and the names of those preparing the addresses are not announced over the radio. This prevents exploitation of individuals.

The members of the profession throughout the state may have a hand in this excellent work by preparing five minute papers upon various subjects and sending them to the secretary of either of the above mentioned organizations. They may also help by informing their patients that these talks are being given over KFAD every Thursday evening at 7 o'clock. It might be well if all the members had signs posted in their offices announcing them.

It is by the kindness of the management of KFAD, owned and operated by the Electrical Equipment Company of 312 North Central Avenue, Phoenix, Arizona, that the Associations are enabled to put on the talks. The wave length of KFAD is 272.6 meters.

RECREATION

Presumably many of us think of recreation as play, a period away from the daily grind, a rest, a summer vacation, or in some such terms. No criticism is or can be attached to any of these expressions. The word recreation has a fuller meaning, however, than have even all these terms taken together. The Century Dictionary says recreation is from the Latin word *recreatus*, which is the past participle of *recreare*, and which means to create again, or anew. It is in this sense that we should regard our play periods. The strict application of the word recreation then must make it synonymous with convalescence. We can neither recreate our health nor can we convalesce without having in a measure been ill. It would also have to be presumed upon this course of reasoning, that long periods of steady application to work, in greater or less degree, have depleting effects upon our health. Those individuals who have so applied themselves to work should be regarded as having the need of recreation, and we as physicians should so advise them in no unmistakable words.

What about that army of persons who have no work, and having none do none? Obviously their play, and idleness, has become their work, and they, in just as positive terms as used in the other instance, should be advised, through such authorities as can enforce the orders, to take recreation by periods, of considerable length, of work.

There will doubtless be found here and there, isolated cases about which a physician will necessarily be in doubt as to whether to advise work or play. Were the practice of medicine a calling requiring no opportunity for a display of judgment, where would be the spice of the work?

Recreations should not be confined to summer vacations. We should have the problem in mind the whole year through.

The entire, or at least the main purpose of the editorial is that we ourselves should not forget our own recreations, and more especially just now, our own summer vacations.

ST. JOSEPH'S HOSPITAL (Phoenix) STAFF MEETING

February 14, 1927.

Total attendance of 52; 47 members of active and associate staffs. Dr. Franklin Martin and Mr. Critchfield; three members of hospital staff.

The program was prepared under Dr. Kimball Bannister's supervision and consisted of a Symposium on Obstetrics, based on a review of the cases treated in the St. Joseph's Hospital and Deaconess Hospital during the years 1925 and

1926. A total of 771 cases were reviewed, 341 from St. Joseph's Hospital and 430 from the Deaconess Hospital.

Dr. R. W. Eaton read a prepared paper on "Conditions in Which There Are Indications and Contra-Indications for the Use of Forceps," which was discussed by Dr. A. J. McIntyre.

Dr. E. R. Charvoz read a paper on "The Indications and Contra-Indications for Cesarean Section," which was discussed by Dr. Joseph M. Greer.

Dr. Dudley Fournier read a paper on "Management of Eclampsia and the Pre-Eclamptic State," which was discussed by Dr. A. M. Tuthill.

Dr. John Wix Thomas read a "Critical Study of Obstetrical Deaths in the Phoenix Hospitals for 1925 and 1926."

Dr. Kimball Bannister summarized the situation under the title, "Are We Practicing Good Obstetrics?"

Dr. W. W. Watkins presented a brief comment on the "Obstetrical Data and Records of the Hospital."

Dr. Franklin Martin spoke for several minutes; he commented very favorably on the character of program and study.

Mr. Critchfield, who is the Field Representative of the Gorgas Memorial, spoke briefly about that project.

The papers and discussions of this program will be printed in Southwestern Medicine, so no summary of these are made here.

W. WARNER WATKINS, Sec'y.

March 19th, 1927.

Twenty-six members of the staff were present, with two visitors.

The program had been prepared under the supervision of Dr. Fred Holmes, and consisted of a Symposium on Surgical Lesions of the Chest, based on the cases treated in the hospital during the past two years, numbering about seventy-five cases.

The subject which was to have been handled by Dr. S. D. Whiting,—"Empyema," was presented by Dr. Holmes. Dr. Holmes was forced to take over this subject at the last moment, and reviewed the twenty-nine cases of this lesion treated in the hospital in two years, seventeen of whom made complete recovery, two deaths and two still under treatment.

Dr. W. O. Sweek opened the discussion, giving the results in ten of the patients who had been treated by him with his gas machine.

Dr. J. M. Greer discussed the surgical indications and necessity for early treatment. Many cases break down again many months after apparently healing.

Dr. J. F. Milloy told about a case whose empyema ruptured into the lung.

Dr. Victor Randolph presented the subject of "Lung Abscess." This was discussed by Dr. Harry J. Felch.

Dr. G. E. Goodrich did not believe there is any such thing as medical treatment of lung abscess.

Dr. J. J. McLoone does not believe tonsillectomy is a frequent cause of lung abscess.

Dr. E. W. Phillips read a paper on "Thoracoplasty," with critical review of the cases in the records. It was discussed by Dr. Willard Smith. Paper and discussion were published in the May issue of Southwestern Medicine.

Dr. S. I. Bloomhardt read a paper on "Anesthesia in Chest Surgery." This was discussed by Dr. H. R. Carson.

Dr. W. W. Watkins showed the x-ray illustrations of several interesting thoracic conditions in the hospital during the period under discussion; non-encapsulated empyema; encapsulated empyema; old empyema fistula injected with lipiodol;

subdiaphragmatic abscess; basal abscess outlined with lipiodol; echinococcus cyst in right lung; subphrenic abscess; with pneumoperitoneum.

This was a very excellent program and deserved a much larger attendance.

W. WARNER WATKINS, Sec'y.

April 11, 1927.

Twenty-five members of the staff in attendance.

The program was on the subject of Chronic Appendicitis, completing the study of the appendicitis cases operated on in the hospital during the years 1924, 1925 and 1926. It was prepared under the supervision of Dr. E. Payne Palmer.

Dr. F. J. Milloy presented the subject of "Symptoms and Diagnosis of Chronic Appendicitis in Adults," which was discussed by Dr. L. H. Thayer.

Dr. F. C. Jordan presented the subject of "Symptoms and Diagnosis of Chronic Appendicitis in Children," with discussion opened by Dr. J. E. Drane.

Dr. W. W. Watkins discussed the x-ray findings in chronic appendicitis in children.

Dr. Dunne, of Minneapolis, a winter visitor in Phoenix, gave a very interesting discussion.

Dr. Roy E. Thomas, of Los Angeles, a visitor, gave a brief discussion, by invitation.

Dr. H. P. Mills presented the "X-ray Diagnosis and Pathology," which was briefly discussed by Dr. H. L. Goss.

Dr. R. T. Franklin presented an "Analysis of Final Results in Chronic Appendicitis," based on returns from a questionnaire sent to 125 patients

This was discussed by Dr. T. W. Woodman and Dr. W. O. Sweet.

It is expected that these papers and discussions will appear in a subsequent issue of Southwestern Medicine, so no summary of them is given here.

W. WARNER WATKINS, Sec'y.

May 9, 1927.

There were thirty-six members of the staff present.

The program had been prepared by Dr. K. Banister, and consisted of a group of selected cases.

Three cases of Pulmonary Edema were discussed, one by Dr. Willard Smith and two by Dr. F. J. Milloy, all had died.

Dr. Milloy also discussed a case which had been diagnosed as Landry's Paralysis, who had died, but autopsy could not be secured.

Dr. Edgar H. Brown discussed a case with symptoms referable to the spine. It was suspected of being a cord tumor, but Dr. Brown regarded it as a case of spinal arthritis.

A general discussion was engaged in over the prevailing epidemic of Acute Glandular Fever (Infectious Mononucleosis). Dr. H. P. Mills presented the findings on one patient who had entered the hospital for tonsillectomy, and blood counts showed a persistently high mononuclear count.

It was evident that many cases of glandular fever had been observed in Phoenix, very few of the physicians recognizing it.

The Staff adjourned to meet again in September.

W. WARNER WATKINS, Sec'y.

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IMPRESSIONS OF INFECTIOUS MONONUCLEOSIS—AFTER A PERUSAL OF ALL AVAILABLE LITERATURE.

By ORVILLE, HARRY BROWN

The first reference in the literature is probably by Filatow, in 1886.

Pfeiffer definitely described the clinical syndrome under the title of "Glandular Fever," in 1889.

In 1920, Sprunt and Evans applied the name "Infectious Mononucleosis."

The condition seems to be a clinical entity of unknown etiology.

Various types of bacteria have been found associated. The sirilla and fusiform bacilli have been encountered with such frequency as to suggest a possible association. There is evidence, however, that there is no direct connection between Vincent's Angina and the Mononucleosis.

The portal of entry of the causative agent is almost certain to be the mouth—probably most commonly the tonsil.

The clinical manifestations are those of an acute infectious process, which lasts about two weeks.

The patient may be extremely ill with high fever, aching, malaise, etc., or the illness may be so that the general symptoms are not severe.

The lymph nodes—especially of the cervical region—enlarge to perhaps one-half inch in diameter and are tender.

The enlargement of the lymph nodes is the outstanding fact especially where the general symptoms are mild.

The lymph node enlargement may be extensive.

It usually endures for two to four or even more months.

The characteristic blood finding is a leucocytosis of moderate grade. The leucocyte count however may not be increased. It rarely exceeds 30,000.

There is always a relative increase of the lymphocytes of 50 to 98 per cent. The granular cells are not increased; they may even be decreased.

Because of this high per cent of lymphocytes it is believed that there may be a relationship between infections mononucleosis and lymphatic leukemia.

The differential diagnosis is ordinarily not difficult.

A number of cases have had a rash which has been misinterpreted as German measles.

The prognosis is favorable. Four deaths however have been reported.

The convalescence is slow—often requiring months.

The treatment is symptomatic.

REVIEW OF LITERATURE ON INFECTIOUS MONONUCLEOSIS.

Filatow¹ in 1886 probably first described cases of the clinical syndrome now known as infectious mononucleosis, although the credit is generally given Pfeiffer as being the first to describe it.

Pfeiffer² in 1889 first described what he designated "Glandular Fever." The chief essentials of his descriptions are that the patients had enlarged tender lymph nodes, especially in the cervical regions and fever, both of a few weeks duration which ended in recovery.

Karsakoff³, Lublinski⁴, Schlissner⁵, Hall⁶, Terlingen⁷, Tschalgajew⁸, Jones⁹, Crane¹⁰, Jackson and Smith¹¹, Vipoad¹², Ludke¹³, West¹⁴, Byers¹⁵, Stark¹⁶, Whitney¹⁷ and others were among early writers upon glandular fever. In the main they added but little to Pfeiffer's original description. Their descriptions picture an acute febrile, recoverable disease lasting ten to thirty days characterized by enlarged lymph nodes especially of the cervical re-

gions. They sometimes found concomitant respiratory tract infection. West's report was upon an epidemic of 96 cases. None of these writers reported blood studies.

Turck¹⁸ in 1907 reported three persons with acute infectious processes and a mononucleosis. One case also had an angina and glandular enlargement.

Clemens¹⁹ had 16 cases of glandular fever in an orphan asylum for boys. He found that there was a definite incubation period of from seven to ten days. His epidemic ended with fumigation of the dormitory. All cases occurred in the one dormitory. One node suppurated and from this he obtained streptococci which proved, however, to be non-pathogenic for rabbits. The suboccipital, mastoid, parotid and the inguinal nodes were enlarged in no case. Neither were the spleens and livers enlarged. The initial symptoms were stiff neck, general myalgia, pain on deglutition, and enlargement of cervical nodes. Nephritis occurred as a common complication. Hyperemia of the discs or optic neuritis developed in ten cases.

Burns²⁰ found that the incubation period may be as short as 24 hours. The leucocytes in his cases varied from 18,000 to 26,400.

Haas²¹ says the chief symptoms are fever, prostration and acute painful swellings of lymph nodes, especially of the neck—occurring in epidemics.

Gall²² says Pfeiffer's disease may last much longer than four or five days. When such occurs he thinks it is the result of work of diphtheria bacilli. He found the bacilli in seven such cases an antitoxin brought about a prompt cure of all.

Marchand²³ reports one case. Cabot²⁴ in 1913 reported four cases with acute lymphadenitis and an acute infection. His blood studies showed that the leucocytes varied from 9000 to 30,000, with the monocytes running from 67 to 82 per cent.

Hall²⁵ in 1914 writes of a case of acute leukemia which made prompt recovery and which is now believed to be infectious mononucleosis. The leucocytes reached 35,000 with 89.6 per cent of mononucleocytes.

Sprunt and Evans²⁶ in 1921 reported six cases of this condition giving the name to it of infectious mononucleosis. They believed that the infectious agent reaches the nodes from the upper respiratory tract. The lymphocytosis is not merely an individual response to infection as tonsillitis in one case after disappearance of the acute condition of mononucleosis caused the typical blood changes.

Blaedorn and Houghton²⁷ recited the records of four cases and used the name lymphoblastosis. They found spiral organisms and fusiform bacilli in three of these four cases and were inclined to attach thereto an etiologic significance.

Morse²⁸ emphasizes that the disease with which we are dealing has a tendency to recur after apparent intervals of quiescence. For this reason many cases go unrecognized especially in the interval following the periods when it has not been heard of for a time. Concerning differential diagnosis he says it must be not confused with lymphatic leukemia. There is little else with which it may easily be confused. He reports two cases.

Zimmerman²⁹ stresses the importance of the throat as the portal of entry; patients usually recover, but convalescence is slow and poor health is apt to prevail for a long time; death rarely occurs and when it does it is from nephritis; occasionally a lymph node may go on to suppuration. Anemia usually endures afterward.

Tidy and Morley³⁰ reported three cases under the name glandular fever. The authors say they find in the literature records of four deaths from this disease. They surveyed the literature of

glandular fever and believe it to be identical with infectious mononucleosis.

Longscope³¹ in 1922 wrote under the heading "Infectious Mononucleosis (Glandular Fever) with a report of ten cases. "reviewing the literature. All of his ten cases had enlarged lymph nodes, fever of few weeks duration, a mononucleosis, and complete recovery. Eight of the ten cases had enlarged spleens; seven had symptoms of infection of the upper respiratory tract. The highest number of leucocytes in these ten cases was about 25,000 and the greatest percentage of monocytes was 95; and both these high counts were in the same patient and practically concomitant. The percentage of monocytes is highest in those cases as a rule with the highest leucocyte counts.

The duration of the acute manifestations was usually two to three weeks, but the return to normal required months—as much as four months in at least part of the cases.

The characteristic mononuclear cell type is one not ordinarily found in normal blood. They were larger than lymphocytes and had oval kidney-shaped lobulated nuclei staining deeply with Wright's stain. The nuclei may or may not nearly fill the cell. The cells had no definite granules. They did not display an oxidase re-action as do myelocytes.

Downey and McKinlay³² found Vincent's organisms in some of their cases but the throats did not have a typical appearance of Vincent's Angina. One of their patients had a diffuse hemorrhagic rash.

Baader³³ found liver enlargement in most of his cases.

Hopmann³⁴ to determine that cases of infectious mononucleosis would respond to stimulating agents just as would other individuals, gave intramuscularly one cc of milk, after recovery, and a leucocytosis of 13,800, developed with 80 per cent of them polynuclears.

Tidy³⁵ says the only definite complication of this condition is hemorrhagic nephritis. He reports an epidemic of infectious mononucleosis in a school where there were thirty boys and twenty-four of them had the disease.

Deussing³⁶ had three cases who were apparently typical cases of infectious mononucleosis. The leucocytes reached 19,500 and the monocytes 87 per cent.

Coon and Hewlis³⁷ isolated diphtheroid bacilli from an excised tonsil and also from an excised lymph node, which in guinea pigs fulfilled Koch's postulates.

Mackey and Wakefield³⁸ report a case of infectious mononucleosis with jaundice. It is their opinion that other cases of jaundice may have been reported as such when infectious mononucleosis was really the diagnosis. In addition to displaying the usual and characteristic manifestations and the jaundice there was epigastric pain and general abdominal tenderness and an enlarged liver. The enlargement of the liver has been noted occasionally by other writers.

Salvesen and Magnussen³⁹ had two young men with moderately swollen lymph nodes, most prominent in the neck, sore throat, fever and an increase of the leucocytes, 75 per cent of which were lymphocytes. One case was later injected with



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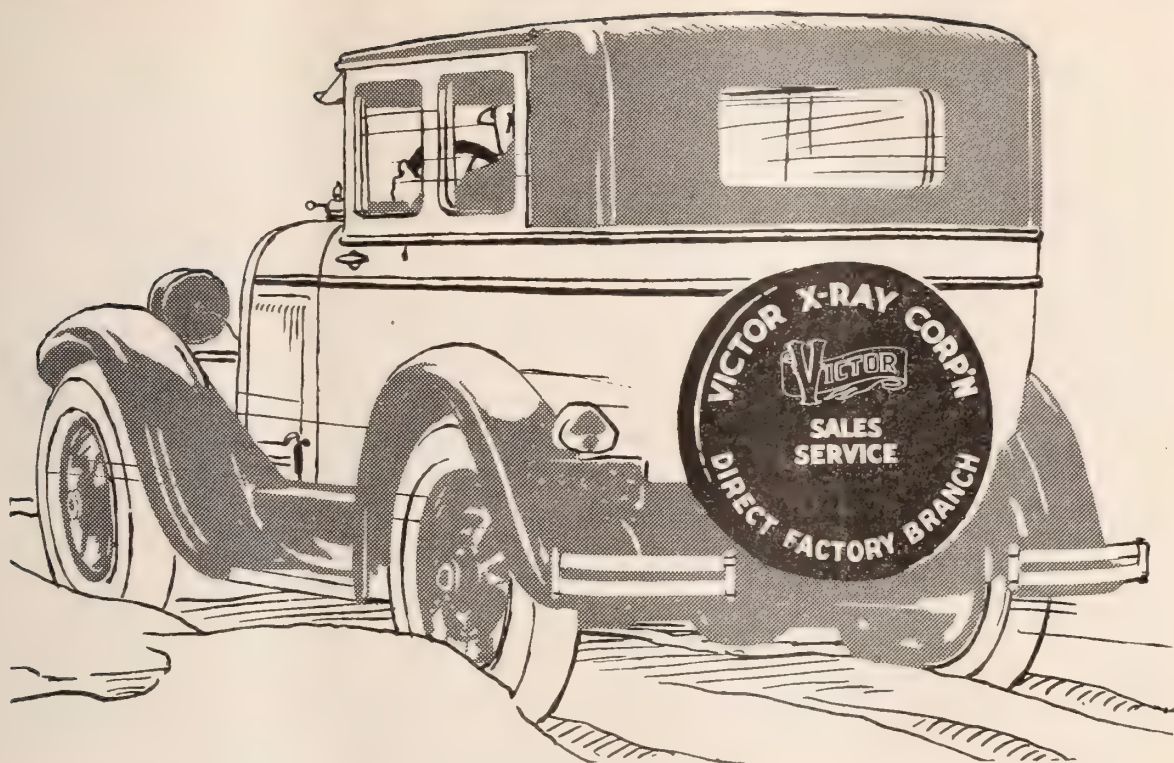
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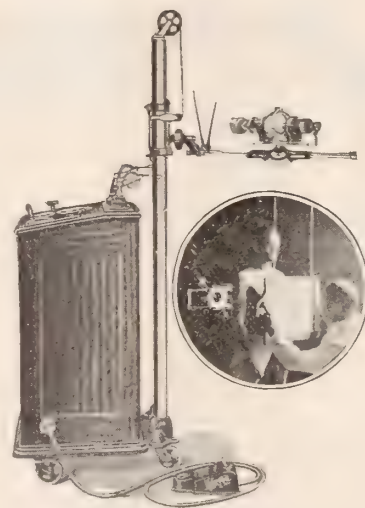
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sterile milk and there resulted the usual increase of neutrophiles, which showed that a mononucleosis was not his normal reaction to infection.

Jager⁴⁰ reports two cases of infectious mononucleosis, both of whom had enlarged spleens, and lymph nodes, with fever and abdominal pains. In one case the abdominal pain was of such severity, with nausea, vomiting and fever as to suggest an acute surgical condition of the abdomen.

Cottrell⁴¹ reports twelve cases and says all had sore throats as a precursor to the condition. In seven ulceration or exudate on the tonsil existed; all but one of the others had congestion of the fauces or pharynx and that one was not seen early. In six of the seven with exudate or ulceration the spirilla and fusiform bacilli were present, and the clinical appearances of the throats and the fetid odor were characteristic of Vincent's Angina.

The enlargement of the lymph nodes was about as has generally been described. The spleen was enlarged in 75 per cent of the cases. He says the nodes were moderately tender. The surrounding tissues may be edematous and swollen.

Cottrell also says, the leucocyte counts vary from normal to 31,000—12,000 to 15,000 being the rule. The characteristic cell is a young lymphocyte or lymphoblast which constitute 40-75 per cent of all leucocytes.

The blood picture remains long after all acute manifestations of the disease are gone, but does return to normal.

The granular cells, it would seem, have a tendency to be suppressed or actually decreased during an acute attack of infectious mononucleosis. No tendency to hemorrhage was observed. Blood

cultures gave nothing to which importance could be attached.

Cottrell says the portal of entry of the unknown causative agent is through the tonsils and lymphoid tissue of the pharynx.


From the standpoint of differential diagnosis there are very few diseases with which infectious mononucleosis can be easily confused. Pertussis, Malta fever, etc., produce lymphocytosis but they have other characteristic features which make their elimination easy. He says Sanders⁴² reported one case of Ludwig's angina with 96 per cent of lymphocytes, which he even suspected were non-granular myeloblasts.

Cottrell refers to two cases of generalized tuberculosis, reported one each by Weichmann⁴³ and Landon⁴⁴, both with blood pictures of leukemia—one myelogenous and the other lymphatic. In acute leukemia the leucocytes usually far outnumber 25,000 to 30,000 which is about the upper limit for the leucocytes in infectious mononucleosis; leukemia is characterized also by anemia, purpura, and progressive deterioration. He says Downey⁴⁵ is certain that the differential diagnosis can be made upon the blood picture alone.

Another condition to be differentiated is agranulocytic angina described by Schenck and Pepper⁴⁶, Moore and Weider⁴⁷, Lauter⁴⁸, Lovett⁴⁹, Leon⁵⁰ and Skiles⁵¹; this is characterized by severe ulcerative angina, extreme leucopenia, profound toxemia, unfavorable prognosis, and tendency to occur in middle aged women.

Fox⁵⁴ summarizes his histologic studies of lymphoid tissue taken from cases of infectious mononucleosis as follows:

"Observations on the history of lymphatic



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tissue removed during the course of infectious mononucleosis and on the staining by the supravital technic of cells from a lymph node in one case are reported.

"The lymphatic tissue showed marked hyperplasia, notably of the small lymphoid cells and to a less extent of the large mononuclears. Phagocytosis of fragments, but not of whole cells, was seen. The lymphocytes appeared quite soft and degenerating. By supravital staining the cells correspond with the lymphoid elements. No monocytes were seen.

"The histology of infectious mononucleosis seems not to be very distinctive, unless it be that there is a marked hyperplasia of all elements with an attempt to retain the architecture of lymph nodes. According to our tissue, however, there should be no confusion with any chronic lymphadenopathy at the height of development of mononucleosis."

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DEACONESS HOSPITAL (Phoenix) STAFF MEETING

The medical and surgical staff of the Arizona Deaconess Hospital met Monday evening, February 28th, 8 p. m., at the hospital with 42 in attendance. The minutes of the last council meeting were read. The chairman of the records committee reported upon the records of the cases who died during the past month as follows:

Case 131. Man, age not given, entered January 24th and died the next day. Double lobar pneumonia; patient in extremis on entrance.

Case 131. Man, age 41, entered January 24, and died the next day, with diagnosis of advanced tuberculosis. Patient in extremis on entrance; there was probably some acute chest complication.

Case 127. Man, age 33, entered January 23rd; dying on the 25th from general peritonitis following operation at which a ruptured gangrenous appendix was found. Case is interesting in that the history and physical findings were so misleading. Disturbance started with abdominal distress and diarrhea, patient's wife having same symptoms. Was ascribed to acute indigestion from eating canned meat. Seen by another doctor in consultation on Saturday at which time there was fever, with vomiting and general tenderness over abdomen but no rigidity anywhere, and bowels had moved six or eight times in 24 hours. Seen again on Saturday when he was still having pain and diarrhea but still no abdominal rigidity. At 4 p. m. Sunday there was a severe attack of pain and following this rigidity developed. He was operated at 9 p. m., finding appendix gangrenous and ruptured and peritonitis present.

Case 104. Man, entered January 20, dying next day from pneumonia, said to have been of eight days duration. Diagnosis of acute nephritis with notation that he had the nephritis before the pneumonia developed. Very inadequate history.

Case 193. Woman, age 50. Illness of about a month's duration; surgeon does not state how long she had been under his own care. Entered January 20 with diagnosis of abscess in appendix region. Operated on 24th, after having refused operation when first entering hospital. Many coils of bowel adherent, with appendix ruptured with abscess formation; abscess drained. Patient died on the 27th.

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Case 53. Man, age 51, entered January 13, died on the 15th, with diagnosis of left lobar pneumonia. Started with a cold about a week previous, pneumonia developing in typical manner with chill.

Case 3. Man, age 56, entered January 10th, died on the 14th. Fractured spine from fall from tree. Case has been reviewed in staff meeting.

Case 26. Married woman, entered January 26th, in stupor. Discharging sinuses about rectum and perineum; sinuses infected with "screw" worms. No history could be obtained. After death, partial autopsy was done, showing gangrenous ileum and ascending colon.

Case 1977. Cause of death given as asthma. Patient was a Portorican, picked up on the street and brought to the hospital. He had extreme dyspnea and cyanosis, with enlarged heart. Probably some circulatory lesion rather than asthma.

Case 1908. Woman entering hospital for eclampsia; cesarian section was done. She developed pneumonia and died 22 days after the operation. Diagnosis of acute endocarditis and insanity.

The further program consisted of an analysis of 40 cases of gall bladder disease.

Dr. Gudgel presented the analysis from the diagnostic standpoint (not including the laboratory findings). He said that an analysis of these cases showed that the only symptom present of any importance was pain in the right upper abdominal quadrant. Nearly all cases have had more than one acute attack; four cases had jaundices; 11 had subacute or chronic appendicitis; one case had pancreatitis; four cases had gall stones; three cases had empyema of the gall bladder; and five had cholecystitis.

There are two classes of gall bladder disease—one with pain and the other without pain. Women are affected more than are men. Those who lead an inactive life and over eat are more often affected

than those who are active and do not over eat. Gall bladder disease is prone to follow typhoid, pneumonia, and gastro-intestinal diseases. Many persons have gall stones without symptoms. One should palpate from the upper abdomen in the right nipple line between each two ribs until the nipple is reached. In like manner do the axillary and scapular lines. Many areas of tenderness are apt to be found in gall bladder disease.

Dr. Jordan's discussion was as follows:

I will discuss mainly a few points in the differential diagnosis of gall bladder disease.

Pain, the most common symptom, may be due to angina pectoris of the low or abdominal type. This is not uncommon in those patients with evidences of arteriosclerosis who are past the age of forty. Relief with nitroglycerin points to an angina.

Pain from a kink in the right ureter or a stone in the right kidney can usually be distinguished by the radiation of the pain to the genitalia and the appearance of blood and not bile in the urine. Lead colic often shows the lead line along the margin of the gums and must be looked for in painters and workers in lead.

The crises of tabes dorsalis are often mistaken for gall stone colic, and special search should be made for past syphilitic infections, loss of patellar reflexes, and pupillary changes. A ruptured duodenal ulcer, acute pancreatitis and gangrenous cholecystitis may be distinguishable.

The pain of acute appendicitis with a high appendix usually extends from below upwards and a rectal examination may reveal a right sided tenderness not found in gall bladder disease. A pneumonia or pleurisy with or without an effusion may cause severe pain and necessitates careful and repeated examination of the chest. With liver abscesses we have

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an enlarged and tender liver with chills, fever and sweats.

A mass if found in the gall bladder region may be a distended gall bladder usually due to a cholecystitis, a stone in the cystic duct or a cancer causing obstruction to the common duct from without. If the gall bladder is palpable and not malignant it is smooth, tense and movable. A hydatid cyst is smooth and firm but it enlarges very slowly, causes very little pain and is not movable. If the enlargement is uneven and hard or if you have an increasing jaundice with loss of weight and strength, it invariably means malignancy.

Dr. H. L. Goss gave an analysis of 36 cases of gall bladder from the laboratory standpoint, as follows:

Urinary findings in the complete series presented no marked abnormalities aside from traces of sugar in two cases, albumen in two, and diacetic acid in one.

The blood picture revealed one case of secondary anemia four showing leucocytosis and three leucopenia. In three cases the coagulation time was increased, and one positive blood Wassermann was found in a case of cholelithiasis. The bacteria involved in six cases of cholecystitis were the colon bacillus, streptococcus, staphylococcus, pneumococcus and the micrococcus catarrhalis. Cultures were not made in all cases and two were found to be sterile.

Twenty nine cases had no radiographic reports probably because reports were not sent to the hospital, when films were taken by outside laboratories. Among the seven cases radiographed, one was made of the chest, leaving six referable to the gall bladder and gastro intestinal tract. Four cases comprised carcinoma of the stomach, chronic appendicitis, tuberculous of the colon and appendix and duodenal obstruction caused by adhesion to the gall bladder. Of the two cases remaining one report was negative where calculi were found at operation; and one gall bladder was not visualized, there being however a stone in the common duct.

Seven radiographic reports out of thirty-six is about seventeen per cent of the total which is much too small for any grade A hospital.

In view of the recent improvement in the gall bladder visualization by the use of sodium tetrabromophenolphthalein, physicians may now be more certain than formerly, of getting definite information from gall bladder films, especially of cholesterol stones which are usually not visible.

Dr. Stroud's analysis from the surgical standpoint is as follows:

I can understand Dr. Watkin's apparent displeasure when looking over the records as some of the history sheets and physical records are absolutely blank, while others are not full enough. A few very excellent records have been kept. Some of the records are still unsigned as well as final results marked. Certainly a surgeon is enough interested in his case to sign his name. He ought to be interested in the hospital, that permits him to work, enough to do that much.

For pre-operative roentgenology of the cases only a few of the cases give any clue as to whether this was done. When it is mentioned in the physical diagnosis the pathologists's report is not ordinarily included in the history making it difficult to prove the x-ray diagnosis with the operative findings. This is important to check up the results of roentgenology. Hard would it be indeed to get any sort of a clue as to the beneficial effects of pre-operative x-ray diagnosis from these forty cases.

From the above data this series shows the following: Age—range from 19 to 72—average 41. Sex—males 8—21%; females 32—80%.

Six had former abdominal operations; four of

these were appendectomies and two were in the gall bladder region.

Eighteen had multiple operations (generally on appendix at time of gall bladder operations—45 per cent; and in all of these the pathologist shows a chronic appendicitis. Adding to this the above four cases gives 55 per cent of all gall bladder cases in this series proven by pathologists report to be complicated by appendicitis.

Twenty-one or 52½ per cent were on gall bladder tract alone. One case which showed definite gall bladder findings at operation was considered of minor importance. Carcinoma dominated the picture and nothing was done.

Cholecystectomy was done in 29 cases—72.5 per cent. Cholecystotomy was done in seven cases—17.5 per cent. There was one case of malignancy and one case of adhesion around the common duct. Free pus in the gall bladder was described in one case where drainage only was done.

There were three deaths, or 7.5 per cent, which compares favorably with other hospitals.

Of the three cases which died one was from shock, the other two from toxemia and exhaustion, probably with peritonitis. Both occurred on the 17th post-operative day.

All but one of the above cases were done under ether anesthesia. The one case was done under a local anesthetic because of a coincident tuberculosis.

Dr. E. Paine Palmer spoke as follows:

The forty cases are representative of a large class of sufferers, from chronic or recurrent diseases of the digestive tract, who suffer for many years be-

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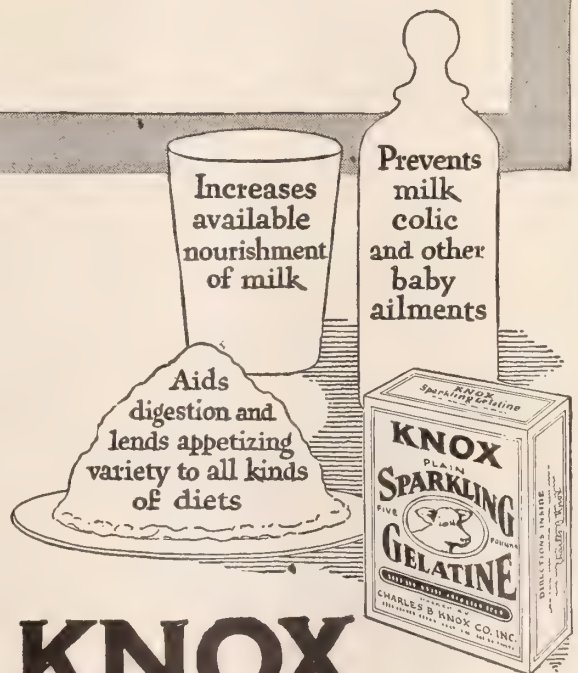
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fore seeking the only relief which promises cure. Unfortunately, the laity and some members of the medical profession have not learned the importance of early operative procedures.

Inflammatory diseases of the gall bladder and biliary tract are prone to sequelae of great gravity. Acute or chronic hepatitis is often present. Gangrene and perforation of the gall bladder, with local and general peritonitis are common complications; both acute and chronic pancreatitis are frequent sequelae. Carcinoma of the gall bladder biliary tract or pancreas are not infrequent sequelae. If there is any place in the body that we can expect carcinoma to result from chronic irritation it is in chronic inflammation of the gall bladder and biliary tract where the irritation is of years standing. The gall bladder, when once seriously diseased, never returns to normal. Unless there are absolute contraindications, cholecystomy is the operation of choice.

The gall bladder, after cholecystotomy, unless the operation is performed in the early stage of disease, ceases to act as an elastic container; it cannot distend and it cannot contract. It ceases to secrete normal mucus and does not act as a concentrator of the bile. It is permeated by organisms and remains capable of spreading its infection. It may drift to malignancy or continue to cause digestive disturbances. Cholecystotomy should be reserved for cases in which technical difficulties make it impossible to remove the organ.

This analysis shows nine cases closed without drainage. Numerous instances are reported in which relaparotomy was necessary because of bile leakage when drainage was omitted. The leakage of bile may be early or delayed. Drainage after cholecystectomy is imperative.

Dr. T. E. McCall opened the discussion by saying that there are many more operations for gall blad-

der disease than formerly which probably indicates simply that patients are being studied more carefully than formerly. He believes that drainage is often preferable to removal. He advises early operation in acute cases.

Dr. Milloy's analysis of forty cases of gall bladder diseases from medical treatment standpoint is as follows:

The most conspicuous thing, in reviewing these forty cases of gall bladder diseases from a medical standpoint, was the complete absence of medical treatment. Of the forty cases which were admitted every one was operated upon soon after admission to the hospital.

One of the most characteristic symptoms of gall bladder disease is the fact that it is prone to undergo remissions, during which time patients may be free from their symptoms for periods of months, or even years. This is probably the outstanding factor in proving the fallacy of medical treatment for cholecystitis.

In recent years the line of attack in relieving chronic dyspepsia produced by gall bladder trouble has been the administration of so-called chologogues. The commonest are calomel, sodium salicylate and bile salts.

Very recently the Lyon method of duodenal drainage with duodenal tube was introduced. This method has apparently proven a failure. Physiological experiments have proved in the last few years, that a meal of animal fat will cause the gall bladder to empty itself more quickly than duodenal lavage with magnesium sulphate solution.

More recently Lyon advocated a regime of three weeks rest in the hospital, during which time the duodenal tube was kept in place most of the time. Three weeks rest in bed will probably give a large majority of cases of chronic cholecystitis more or less temporary relief.

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Sometimes an alkaline regime, accompanied by repeated gastric lavage, especially at bedtime, such as the Sippy treatment for peptic ulcer, alleviates the symptoms of chronic cholecystitis very much. Probably the relief some of the patients obtain may be explained by the fact that a small percentage of cases have both peptic ulcer and an infected gall bladder.

Dr. Burtch discussed anesthesia as follows: The records contain the most meager notations as to even what anesthetics were used; one record of an operation lasting one hour stating "ether 1 oz.?" truly an economical use of anesthetic. In many cases no mention is made as to whether or not preliminary medication was used. Too many cases are presented to the anesthetist with no information whatever as to the condition of the patient, with a request "to listen to the heart and proceed with the anesthetic." In this series of cases luck has been with the anesthetists, for in none of these has there been any serious consequences traceable to the anesthetic.

Of the twenty-seven cases whose records were available I find preliminary drugs were administered in six cases in which ether alone was used, two in which nitrous oxide-oxygen was the anesthetic and three where oxygen was chosen.

In seven of the cases lung affections had been or were present, and the anesthetics were one ether, one nitrous oxide-oxygen, three ethylene-oxygen and two with analgesia. Two cases only have record of shock—one was given ether with operation lasting seventy minutes in which the patient died the second day following operation; the other mild shock was in a case of incision nad drainage lasting twenty-five minutes and was done under analgesia.

Of the total cases, twelve were done under ether, while five under nitrous oxide and eight under ethylene-oxygen, and three of nitrous oxide-oxygen, and five of those using ethylene-oxygen, ether was used at some stage of the operation, while in one case all three were used at some period. The use of analgesia, anoci-association and the gas anesthetics is steadily gaining ground.

In six cases of this series no record is had as to emesis; while all the others had more or less severe emesis, either early or late. Commenting on the anesthetics, wish to impress upon all the necessity for more complete records of anesthetics, a more careful evaluation of the risks prior to operation, a more intimate discussion of the case with anesthetist prior to arrival of patient in anesthesia room and much care in the selection of anesthetic. Nitrous oxide-oxygen is an ideal anesthetic in all cases where relaxation is not an essential, in which cases ethylene-oxygen is much more satisfactory.

Dr. S. I. Bloomhardt emphasized medication saying that such treatment is often of equal importance with the inhalation agent. The margin of safety is considerably increased by the proper preparatory treatment. He recommended the use of morphine and magnesia sulfate, or morphine and scopolamin. Whatever is used, enough should be given to produce the desired effect.

Dr. Harry Carson spoke of the importance of removing anesthetic vapors from the operating room. These should be conducted directly from the mask to the outside. There is an apparatus designed for this special course and it is not difficult to install in most any operating room.

Dr. I. L. Garrison exhibited a gall bladder with 357 stones; the radiographs were also exhibited; these pictured the stones much as a bunch of grapes. He also spoke of the type of operation and the excellent result obtained.

Dr. C. W. Sult opened the general discussion by saying: No discussion of this subject is complete without a resume of the anatomy. (This was admirably presented which for lack of space is omitted.)

In the light of recent investigations it becomes more and more apparent that the gall bladder must be regarded as a vestigial organ, rendering but little service to the human economy. Many species of animals, like the elephant, horse, rat, etc., are devoid of gall bladders. No outward effects have ever been observed from the innumerable cholecystectomies in man. Its power of concentration is offset by its small size which is insufficient to regulate the large amount of bile eliminated by the liver during the twenty-four hours. Its function must be considered merely as an overflow receptacle in the nature of a diverticulum of the common duct devoid of contractile powers, which is merely able to receive small quantities of bile whenever the intraductal pressure rises higher than usual. The emptying of the gall bladder is merely a passive act dependent upon mechanical factors, such as pressure from an engorged liver during the digestive period.

Recent experiments which consisted of injecting carmin into the gall bladder, revealed that the gall bladder did not discharge its contents in days, some of it still remaining after a month's time.

It was formerly thought that the offending organism were the bacilli coli, but later studies of the macerated bladder has shown that the streptococci and the staphylococci are the most frequent offenders.

We must always bear in mind that when we have the symptoms, whether it be local pain, tenderness or reflex gastric disturbances, they are all due to the infection in the gall bladder or in the ducts. The gall bladder is always a target for infection from focal disturbance in some other part of the body.

Dr. Willard Smith discussed the comparative anatomy and physiology of the gall bladder with

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reference to the case which Dr. Tuthill was scheduled to report—a person with no gall bladder. At least none was found at operation.

Drs. Bailey, Smith and Stroud joined in the general discussion.

The new interne was introduced to the staff.

The meeting stood adjourned at ten o'clock.

Dr. H. P. Mills acted as secretary for the period during which the secretary was absent.

The Medical and Surgical Staff of the Arizona Deaconess Hospital met Monday evening, March 28th, for the regular monthly meeting.

The minutes of the last council meeting were read.

The program consisted of a study of nephritis.

An analytical study, of several hundred routine examinations, compiled by the laboratory technician was read by Dr. Garland B. Couch.

An analytical study of sixty-four case records showing albumin and casts, was presented by Dr. H. M. Purcell.

Three cases, of nephritis was presented by the secretary in the absence of Dr. A. M. Tuthill.

A case of malignant hypertension was presented by Dr. Frank Milloy.

A case of acute nephritis with no abnormal urine findings save albumin was presented by Dr. Marcus E. Wilson.

Modern conceptions of nephritis and hypertension were presented by Dr. Warner Watkins.

Discussion was opened by Dr. Morton Kimball.

The Medical and Surgical Staff of the Arizona Deaconess Hospital met Monday evening, April 30th, at 8 p. m., in the board room of the hospital.

The minutes of the last council meeting were read.

The scientific program consisted of a group of six cases on "eclampsia," and five other cases all recently in the hospital.

Two cases of eclampsia by Dr. C. B. Palmer. (Read by the secretary in the absence of Dr. Palmer.)

One case of eclampsia was presented by Dr. D. Fournier.

One case of eclampsia was presented by Dr. John Wix Thomas.

One case of eclampsia was presented by Dr. H. J. Felch.

One case of eclampsia was presented by Dr. L. A. Burch.

One case of chronic appendicitis, cholelithiasis, and acute intestinal obstruction by Dr. A. M. Tuthill. (Read by the secretary in the absence of Dr. Tuthill.)

A case of tuberculosis of bladder, with death and autopsy was presented by Orville Harry Brown.

A case of cesarean section, contracted pelvis and endocrine deficiency; a case of tumor of the hypophysis and hemorrhage of the fourth ventricle and autopsy, presented by Dr. Kimball Bannister.

A case of chronic maxillary sinus infection followed by erysipelas, presented by Dr. W. A. Schwartz.

The regular May meeting of the Medical and Surgical Staff of the Arizona Deaconess Hospital was held Monday, May 23rd, 8 p. m.

The minutes of the last council meeting were read. The records committee reported upon the deaths for March and April.

The main part of the program consisted of a group of pediatric cases, all of which had been in the hospital in recent weeks.

A case of Marasmus presented by Dr. H. R. Carson.

A case of upper respiratory tract infection, presented by Dr. Dudley Fournier.

A case of diarrhea and dehydration presented by Dr. J. D. Hamer.

A case of diarrhea and dehydration (death), by Dr. J. R. Shupe. (This case was presented by the secretary in the absence of Dr. Shupe).

Diarrhea and upper respiratory tract infection presented by Dr. E. R. Charvoz.

Diarrhea—meningitis (death and autopsy) presented by Dr. H. R. Carson.

The diarrheas which have been in the hospital represent but a small part of those which have occurred in the community. A free discussion of the condition was held and much interest aroused in the seriousness of the summer diarrheas which are prevalent every summer.

Orville Harry Brown, Secretary.

GRANT COUNTY (N. M.) MEDICAL SOCIETY

The regular monthly meeting of the Grant County Medical Society was held in the Officers' Club, Fort Bayard, New Mexico, May 27, 1927.

The president, Dr. D. Kramer, called the meeting to order at 8:20 p. m. The following were present: Drs. Kramer, Parmenter, Lacy, Groves, Ferrell, Polak, Hazen, Danielson and Wood.

The minutes of the last meeting were read and approved without change.

The paper of the evening was read by Dr. Donahue, "Atypical Findings in Neurological Cases." The paper was well prepared and read. Two interesting cases were presented and slides of each were exhibited. The paper was discussed by Dr. Danielson, Dr. Parmenter, Dr. Polak and others.

Dr. Colvard did not appear with his clinic. Dr. Danielson presented a case of syphilitic aortitis which was a very unusual and interesting case because of size of heart and anomalies of heart sounds. The case was taken to the fluoroscope and E. E. N. T. Clinics for further examination.

J. P. Wood, Sec.

PERSONALS

DR. ROBERT W. CRAIG, who was operated upon last month for fulminating appendicitis, is out of the hospital and doing nicely. He will not be back in his office, however, before fall.

DR. H. I. McNEILL, of Mesa, has gone to Korb, near Eureka, California, for the summer.

DR. EDGAR H. BROWN left June 3 to be present in Los Angeles for his daughter's graduation in the University of Southern California.

DR. J. D. HAMER, the industrious interne in the Arizona Deaconess Hospital, spent a week-end over Memorial Day in Los Angeles.

DR. J. M. MEASON of Chandler, who took a post graduate course in surgery in Chicago for several months, returned to his office about the 10th of June.

DR. F. L. REESE has appeared in several of the Little Theatre plays during the past winter. His last one was "If I Were King," and he played the part of Louis as only a professional could.

DR. C. D. JEFFRIES of Williams, Arizona, recently had a fishing trip in the White Mountains with his family.

DR. W. G. SCHULTZ, of Tucson, attended the recent meetings of the American Medical Association in Washington, and the American Urlogical Association in Baltimore.

DR. EUGENE BARRYMORE, formerly of Bowling Green, Mo., who has been sojourning in the southwest for a number of years on account of his physical disability, has come to Phoenix for a probably prolonged stay.

DR. VERNON KENNEDY, an old Phoenix boy, has returned home to enter into the practice of medicine. He is to be associated with Dr. George Goodrich.

DR. E. W. PHILLIPS, physician in charge of St. Luke's Home, has moved himself and his patients to Prescott for the summer.

DR. C. C. HERBERT, Jerome, Arizona, is at the coast on a vacation.

DR. L. E. WIGHTMAN has just returned from a two weeks trip to coast points.

DR. I. D. LOEWY, of Whipple Barracks, made trips to Phoenix during the month to appear in federal court as a witness.

DR. GAIL ALLEE, commanding officer of Whipple, made a two day visit to Phoenix during the month.

Dr. C. R. K. Swetnam of Prescott left on May 8th for Los Angeles, where he was operated on at the Eye and Ear Hospital for antrum trouble. He returned to Prescott May 22nd and resumed his practice on June 10th, having been greatly benefitted by surgical treatment received.

Dr. and Mrs. H. T. Southworth and daughter, Dorothy Fay, of Prescott, returned June 16th from an extensive West Coast trip which included everything from Los Angeles to Victoria, B. C. They reported having had a delightful time. Their son Harry returned to Prescott with them.

Dr. and Mrs. R. N. Loney and daughter Marjory Bell, of Prescott, left for a two weeks' camping trip to be spent at Diamond Rock Lodge near Springerville, Arizona. They expect to spend their time in fishing and recreation.

Dr. and Mrs. C. C. Benedict and son, of Whipple, Arizona, left during the week for their vacation by motor for California.

Dr. and Mrs. J. C. Herrick, of Whipple, Arizona, returned from an extensive motor trip in Northern California. They reported having encountered much rain but had an enjoyable trip.

Mrs. Allen, wife of Dr. James H. Allen, of Prescott, passed away on May 22nd, after several months illness. The following members of the Yavapai County Medical Society served as pall bearers: Drs. Flinn, Southworth and Yount, and from Whipple, Drs. Allee, McCarty and Brooks. During her several years of residence here Mrs. Allen had made a host of friends and the floral tributes testified to her popularity. The sympathy of the community is extended to Dr. Allen and his children.

DR. W. T. MURPHY of the Murphy Sanatorium, 123 South Fifth street, Albuquerque, New Mexico, died on May 16, 1927, of pulmonary tuberculosis. Dr. Murphy graduated from the University of Illinois in 1908 and came to Albuquerque, in 1911.

DR. AND MRS. J. J. P. ARMSTRONG are leaving Douglas June 20 for a vacation trip of three months or more. Going from New York, they will take one of the boats of the Cunard line for North Cape, the land of the Midnight Sun, stopping en route at Iceland. Coming down from the north they will sail along the Scandinavian coast past the fiords of Norway, visiting the principal cities en route. They will later visit Belgium, Holland, western Germany, the Rhine, Switzerland, France and England. On their return to the United States, the doctor will attend a meeting of the American Electric Therapeutic association, which meets in New York in September.

DR. F. T. WRIGHT, retired, touring Europe with Mrs. Wright. Expected home about Sept. 1st.

DR. CARL H. LUND, accompanied by his wife, touring Europe. Expected home July 4th.

DR. AND MRS. L. J. TUTTLE have gone to Europe, the doctor to attend International Clinics.

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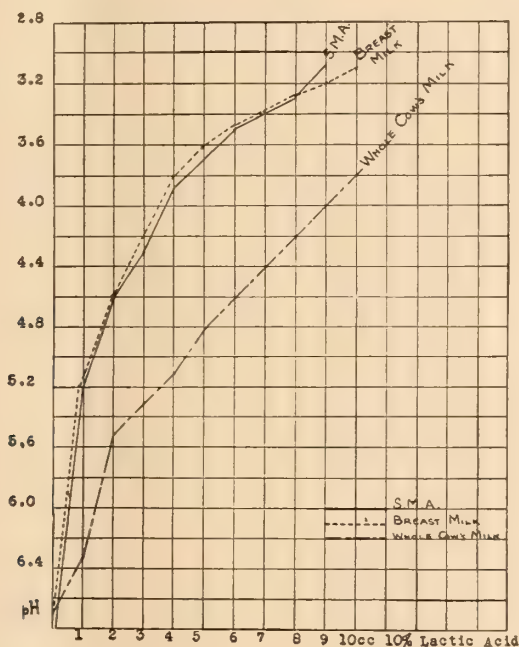
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Volume XI

JULY, 1927

No. 7

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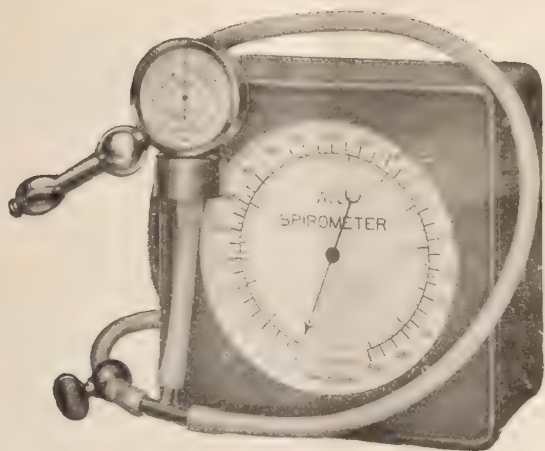
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ORRIS CORYZA

E. W. PHILLIPS, M. D.
Phoenix, Arizona.

Read before the Thirty-sixth Annual Meeting of the Arizona State Medical Association, in Yuma, Arizona, April 21 to 23, 1927.

Of all the allergic diseases, orris coryza is probably the one oftenest missed in diagnosis; or, if diagnosed, the one least adequately treated. A great number of physicians treat annually a few cases of hay-fever, using the commercial pollen extracts appropriate to the season and to the place, with varying degrees of success. They seldom test a seasonal case with a potent extract of orris root; yet an unrecognized orris sensitization complicating a pollen hay-fever, will ruin the result of pollen therapy. Many orris-sensitized patients have perennial and rather atypical symptoms, for which they consult the rhinologist; and he, intent on the pathologic changes with which he is specially qualified to deal, too often overlooks the allergic factor altogether. While most recent writers on allergic disease mention orris root as a cause of hay-fever, few give the space it deserves to an ailment which of late years has become distressingly common.

Referring to orris root, Duke¹ states that "patients frequently react to it, both clinically and cutaneously; in fact, more frequently to this than to any other single agent studied, except pollen." Cooke² found that 47 of 327 patients reacted to orris root. Rackemann³ observed that 44 of 428 cases of vasomotor rhinitis "gave a definitely positive skin reaction to an extract of orris root."

Authorities differ concerning exposure to the substance. Referring to orris root, Duke states that "it is contained in the majority of perfumes, face powders, sachets, tooth pastes, tooth powders, and is even used occasionally as a flavoring material and as a dye." Miller and Taussig⁴, on the other hand, do not mention it in their recent article on cosmetics. Rackemann, in the article referred to, exemplifies what is

probably the opinion and the practice of most doctors when he relates that, of his forty-four patients reacting to orris root, "in only twenty-one cases has it so far been possible to prove, by relief from symptoms when face powder was eliminated, that this orris root was the cause of the trouble."

This essay is based on an effort, made in the spring and summer of 1926, to evaluate the importance of orris root as a pathogenic agent in a group of 105 women suffering from hay-fever. All of these women have been under observation at least one season, most of them from two to five years. Some were known to be orris-sensitive and had in preceding years received appropriate treatment.

TEST REAGENTS

For this investigation, potent and relatively stable 1:10 extracts of orris root were prepared: one with saturated salt-glycerol solvent (Clock), which, as Caulfield⁵ notes, is slightly acid; the other with normal salt solution enriched by one-half of one per cent each of phenol and sodium bicarbonate—a variant of Coca's fluid. The ether-soluble aromatic extractives, which had been removed before making these extracts, were concentrated, re-dissolved, and saved for testing. After some delay, samples of the commercial extractives of orris were obtained. They were: oil of orris, tenfold; orris root, Florentine, concrete; oleoresin of orris root, and alcoholic tincture of orris root. "These are the four principal preparations used by perfumers for introducing the orris note into their aromatic compositions."

METHOD OF TESTING

First, cutaneous tests were made with extracts of those pollens and dusts (including rice powder) to which the patient was exposed; also with the two extracts of orris root and the solution of the ether-soluble extractives. The perfumers' extractives were similarly tried on sixty-one patients, and they were used as an inhalation test, the patient sniffing at the uncorked bottles.

When the reaction to the cutaneous tests with orris preparations was negative or doubtful, intradermal tests with one or both of the two extracts of orris root were done, using as a negative control the solvent and as a positive control, when that was available, the extract of a pollen or dust to which the patient was known to be sensitized.

RESULT OF TESTS

The results of these tests are shown in Table I.

Of 105 women with hay-fever, twenty-five reacted positively to orris by the scratch test, while eight more, whose response to that test had been negative or doubtful, gave a positive reaction by the intradermal method. None reacted to rice. None reacted positively to the ether-soluble extractives, nor to the perfumers' extractives. In other words, nearly a third of the patients showed evidence of cutaneous hypersensitiveness to an extract of orris root from which the ether-soluble aromatics had been removed, and none reacted to the aromatic extractives.

Twenty-six of these orris-sensitive women reacted to pollen also, the pollen sensitization being probably the earlier. This point was not in doubt in the cases of five who, having been under observation for several years, had been observed to acquire an allergic response to orris root within the last year or two.

SOURCE OF ORRIS ROOT

Attempts to locate the source of the orris root were at first unsuccessful. Tests were made with soaps, tooth pastes, creams, perfumes and face powders belonging to the patients, nearly all with negative results. At first I shared the common belief that face powder is one of the chief causes of orris coryza, and was perplexed to find, of numerous sorts extracted, only one that produced a weakly positive reaction. Inquiries were then sent to the makers of widely advertised face powders. Out of eleven replies, only one admitted the presence of "from 1/2 to 1 per cent" of orris in product. Two others stated that they had formerly used orris root, but had discontinued its use in face powder. This was in agreement with the testimony of the patients, who declared that they used certain brands of face powder without annoyance. It soon became evident that the modern heavy face powder, though constantly dabbed on the nose, as a rule has nothing to do with orris coryza.

Further investigation revealed that the bulkier products, talcs and dusting powders and bath powders that are tinted and

strongly scented, are the offenders. Extracts of several of these, and particularly of two well-advertised brands, produced brilliant reactions when tried on patients who were known to be orris-sensitive. It appears that powdered orris root enters into many of the body powders. Its function is primarily that of a perfume fixative, to take up and hold and slowly diffuse the essences of the scent employed; besides, it has an agreeable odor of its own, and a flesh tint.

The use of scented body powders has of late years been enormously increased by nation-wide advertising which has for its key-note "personal daintiness," with something more than a hint at the perceptibility of body odors. One learns that face powder is employed no lower than the neck. On the arms and chest, especially in the axillae, scented talc is applied. Many women dust themselves all over after bathing, using a five-inch puff to apply the fragrant bath powder. The present styles of feminine apparel leave progressively more of the body surface to be seen and, therefore, to be powdered and the scant loose clothing permits the powder to fly in the air. Then there are the sachets, kept among the fresh linen, and usually containing orris root. A woman who happens to buy orris-containing powders, even though she may not use them to excess, in time produces for herself and those about her an adequate exposure to orris dust.

OTHER ETIOLOGIC FACTORS

Nothing about the personnel of the group studied indicates unusual exposure to orris powder. There was only one occupational case, that of an institutional nurse, whose duties included making the beds and handling the effects of women. She suffered severely, requiring a large daily dosage of orris extract to keep her comfortable while thus employed; when assigned to other work in the same institution she promptly became symptom-free. Two of the patients were school girls, aged nine and eleven respectively. Both these children had in previous years been completely protected from hay-fever by pollen therapy; but last summer they had to be given, in addition, injections of orris extract in order to obtain complete relief. The other women were of the prosperous well-dressed type so much in evidence in any American city and with no extraordinary exposure to powder.

Meteorologic conditions, as modified by climate and season, appear to have a marked effect on orris coryza. A number of these patients are accustomed to spend a part of each summer on the California

coast, where they experience marked relief. This is true of those sensitive to orris alone, as well as of those with multiple sensitization. Here the differences in temperature and in atmospheric moisture must be the deciding factors. Dusts are more buoyant in hot dry air. This point is emphasized by the fact that all but one of these orris-sensitized women sought relief from seasonal hay-fever. Of course, in summer women wear less clothing and more powder; but the quantity of powder that they inhale is also increased by the dryness and warmth of the air.

SYMPTOMS

While the symptoms complained of were those of seasonal hay-fever, suggestive differences in the history and in the course of the ailment were noted as between the straight pollen cases and those in which orris dust was an offending agent. The orris cases exhibit a certain irregularity: the dates of onset and relief do not correspond to the known periods of local pollens, and the severity of the symptoms varies to an unusual degree. This is noticeable especially in the case with mixed sensitization, in which pollen therapy only has been employed. Such a patient, on an adequate pollen dosage and with evidence of sufficient desensitization, is never quite comfortable and has occasional sharp attacks of hay-fever which make the whole treatment unsatisfactory. Also, women sensitive to orris root usually relate that they are subject to frequent and sudden "colds," which are apt to come on embarrassingly in church or at the theatre, or wherever women are gathered together in a confined air-space. It is interesting that only one woman of this series had appreciated the relation of her symptoms to the inhalation of powder.

The winter symptoms were described by most of the patients as colds—"one cold after another," several phrased it. While they shared with other hay-fever victims the marked susceptibility to nasal infections which Duke⁷ has been at some pains to make clear, it is evident that many of their winter attacks were orris coryza. Most of those who received specific orris therapy report a relative freedom from winter colds.

TREATMENT

For several years I have refrained from advising orris-sensitive women to use no powder. The ones who need such advice will not for long follow it. It is impossible for a woman who goes about socially to avoid orris dust, even if she herself carries none. All those whose cases are here reported were carefully instructed to discard

orris-containing products, and were furnished with a list of inoffensive powders. Yet only five went through the season without injections of orris extract, obtaining complete relief from pollen therapy alone.

Of the twenty-eight who were judged to need specific treatment, eleven who began to have hay-fever before their pollens were in the air, were treated from the start with a mixture of orris and pollen extracts. Ten of these got good results, one was not benefited. Ten others received the usual pollen dosage, supplemented by intradermal injections of orris extract whenever their symptoms so indicated. This method has the advantage of enabling one to judge the orris reaction by itself. Nine of this group obtained relief, one was relieved of her seasonal asthma but not of hay-fever. The seven who reacted to orris alone were all relieved by specific therapy. As would be expected from the perennial and irregular exposure, they showed a tendency to relapse.

The technic of orris therapy was similar to that employed by the writer⁸ in pollen therapy during the attack. It is perhaps worth while repeating that specific treatment with orris root is nearly always, potentially at least, a coseasonal treatment. The individual's tolerance was first determined by skin tests, and the earlier doses were kept safely low. The interval between doses, at first one or two days, was gradually lengthened as the dose was increased. The dose was carried up to twice that at which relief of symptoms occurred, and held at that level for several weeks—in some cases, for several months. Desensitization to the point of abolishing the skin reaction was thought necessary in only one case.

Individuals varied widely in their degree of sensitization, and there was no fixed dose schedule. The initial injection was oftenest about 0.05 c. c. of a 1:2000 extract, administered intradermally. The final dose varied widely: some patients required no more than 0.10 of the 1:50 glycerol extract to control symptoms, while one took 1.5 c. c. of the 1:10 alkaline extract daily for several weeks. The salt-glycerol extract was found to be therapeutically superior to the alkaline extract, though in skin tests their potency had been apparently the same.

COMMENT

In the small group of hay-fever patients here studied, orris sensitization was of considerable importance. The women sensitized to orris alone, suffered severely. While it was not always possible to determine to

what extent orris dust contributed to the discomfort of those multiply sensitized, its influence was judged to be sufficient to prevent complete relief by pollen therapy in four-fifths of such cases, and the use of orris extract in treating these patients was attended by excellent results.

Whether orris dust is so important as a hay-fever agent in other regions remains to be seen. The relief conferred by the damp air of the coast would seem to argue otherwise. But in most cities of this country women live during half of the year in the climate of the steam-heated apartment. According to Hubbard⁹, this has an average temperature of 75° F. and a relative humidity of 19. Orris dust is buoyant in an atmosphere so conditioned, and it would be worth while investigating what part it plays in causing seasonal hay-fever, recurrent coryza, and obstinate rhinitis which is not definitely traceable to infection. But such an investigation will be worse than useless unless a potent and reliable extract is employed for testing.

Instances of sensitization to essential oils have been reported, and there is no reason why the aromatic extractives of orris root should not behave allergically on occasion, but such cases must be rare. This is probably the reason why, in a large number of tests, I have found few men who are clinically sensitive to orris. The scented toilet articles which men are now being taught to buy are mostly pastes, creams and lotions. The male does not use much powder, and even if he did, his clothes would prevent him from inhaling it.

It is significant that five patients were observed to acquire clinical and cutaneous sensitization to orris root during the years they were under observation. This can hardly be an isolated experience; it is what one would expect from the increasing exposure. Accurate statistics are not to be had, but it is estimated that in 1925 the women of the United States spent something between \$115,000,000 and \$250,000,000 for scented cosmetics, and the figures for 1926 are expected to be larger. So long as prosperity continues and the mode demands, women will use as much powder as they like, in spite of medical advice to the contrary. Nevertheless, the prevention of orris coryza can be accomplished, by the simple means of spreading the information that for all practical purposes sensitization is caused only by the powdered root. The manufacturers can be trusted to eliminate from their products a substance which is

generally known to cause such an unbecoming ailment as hay-fever.

CONCLUSIONS

1. Orris dust, either alone or in association with pollens, is a common cause of hay-fever in women.
2. Powdered orris root is found in many talcs, bath powders and sachets; it is seldom present in face powder.
3. The aromatic extractives of orris, used in perfumes, are relatively harmless.
4. Orris coryza usually takes the form of seasonal hay-fever with irregular onset date and with marked variability in the severity of symptoms; in winter the exacerbations appear as frequent and sudden "colds."
5. Women who are socially active cannot avoid exposure to orris root.
6. Specific treatment with a potent extract of orris root relieves orris coryza.
7. All women with hay-fever, or with stubborn rhinitis not clearly traceable to infection, should be tested for sensitization to orris root.

TABLE I.

Positive reactions:

To pollens only	68
To pollens and orris root.....	26
To orris root only	7
To pollens and animal dusts.....	1
To animal dusts only	1
All reactions negative	2

105

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DISCUSSION

DR. CHARLES S. KIBLER, Tucson, Arizona, (opening): I have enjoyed this paper very much, and consider it a splendid piece of research work. I should like to emphasize, with Dr. Phillips, the importance of not being contented with the ordinary skin tests in treating asthma and hay fever. If tests are negative, they should be repeated in a few weeks and at a more favorable time, because many patients go through negative phases. Particularly

with all proteins that may be inhaled, if skin tests prove negative, one should resort to intracutaneous tests; in asthma and hay-fever many cases will be picked up by this method which, otherwise, would not be detected. We are finding that a much higher percentage of the asthma cases belong to the sensitive group than was formerly supposed; I believe it is not too much to say that seventy-five per cent of the asthma cases are in the sensitive group. Many observers believe this so strongly that they are taking all asthma cases and desensitizing them, whether they react to season pollens or not. I should like to emphasize one point and that is that no one can satisfactorily treat hay-fever unless he is somewhat of a botanist; you must know your local weeds and their periods of pollination, otherwise you cannot get good results. No patient should be simply tested with the various pollens and treated accordingly, because it is useless to treat patients with any pollens to which they will not be exposed. I should like to ask Dr. Phillips if he has found any cases of asthma that he is satisfied are due entirely to orris root, and whether he has had cases of orris root coryza complicated by asthma also. I wish to congratulate Dr. Phillips, again, on a real contribution to allergy.

DR. D. F. HARBRIDGE, Phoenix, Arizona: Every once in a while the oculist gets hold of a patient with a conjunctivitis that he is unable to attribute to any of the usual causes. If we can prevail sufficiently on the woman to withhold cosmetics for a time and to remain from such surroundings as mentioned by Dr. Phillips, she recovers very promptly. Doubtless a percentage of these inflammations are due to the mechanical effect of the cosmetic, yet there is no question but that sensitization plays a very important part in a goodly number. Along this same line of thought may be mentioned certain types of lid-border inflammation due to some of the highly colored materials used on the eyelashes.

DR. M. C. HARDING, San Diego, Calif.: Have you had any experience with sensitization to adhesive plaster on account of the orris root in it? Some work has been done in connection with dermatitis from adhesive in orris sensitive people. I wonder if Dr. Phillips has had any observations along this line.

DR. CHARLES S. KIBLER, Tucson: One more point; the intradermal testing is not without having previously used the scratch test. In using the intradermal test, use one at a time and have the patient remain under observation for forty-five minutes, and be ready for allergic shock. Some deaths have been reported that resulted from using too many intracutaneous tests, with resulting shock.

DR. E. W. PHILLIPS, Phoenix, (closing): I have been treated very kindly in the discussion, and thank you. As to the old asthmatics and their sensitization to orris: I have some, not included in this report, who have in orris root one of their main sensitizations. In the southwest, agreeing with Dr. Kibler, I find that the asthma of adults is mostly from allergy to inhaled substances, and orris is one of the common dusts. I very heartily agree with the statements about the intradermal test. In routine work, the skin test is done first and if the orris reaction is positive, no intradermal test with orris is made. In the treatment, this is begun with a dilution so low that it would produce only a faint or doubtful reaction on a cut. One may get a very beautiful shock by injecting full strength test solution in a highly sensitive patient; there are some people in Phoenix who could bear me out in that statement. Have seen one most fascinating case of orris asthma in a child; after testing with everything else, found that it came from the orris shampoo that the mother used. She had traveled to Egypt and elsewhere seeking climatic relief for that boy's asthma, and was carrying the cause of it with

her all the time. I have not seen any dermatitis from orris, much to my surprise; the custom is now quite common to apply orris powder to the recently shaved axilla, but have not seen dermatitis in such instances; do not know why. I do not know about the reactions from adhesive plaster. Dr. Harbridge spoke of conjunctivitis; the orris cases do suffer a lot from conjunctivitis, because oftentimes when they are warm, they put some powder on the forehead. Another thing, baby powder may get into the eyes and produce conjunctival irritation.

DR. A. E. GALLANT, Los Angeles, Calif.: It is a known fact that certain kinds of adhesive on the market cause irritation. Orris root is extensively used in the preparation of adhesive plaster.

SURGICAL AND POSTURAL TREATMENT OF DIFFUSE PERITONITIS.

C. A. THOMAS, M. D.
Tucson, Arizona

Read before the Thirty-sixth Annual Meeting of the Arizona State Medical Association, held in Yuma, April 21 to 23, 1927.

The operative treatment of generalized peritonitis has, for several years, been more or less standardized, with an occasional new remedy or slight change in post-operative treatment advocated by some surgeon. The most notable of these are the administration of chlorides as advocated by Orr, Babcock and others, and the administration of glucose. Since the treatment has become standardized the mortality has also become standardized with a death rate around 50 per cent. Even those who recovered were subjected to a long course of invalidism and much distress. The great distress and high mortality raised the question of the cause, or causes, of death in this condition. This we endeavored to solve before adopting new methods of treatment.

All authorities agree that early deaths in acute diffuse peritonitis are due to the absorption of toxins resulting from the massive infection, with paralytic ileus and its attendant regurgitation and, soon, added absorption of toxic products outside the paralytic area, adding its quota toward the complete overwhelming of the vaso-motor system. Later causes of death are: first, toxic effect of acid products (acidosis); second, fatigue and exhaustion of nervous system; and third, insufficient fluids or nourishment, and lowering of blood chlorides.

An ideal plan of treatment for this condition, therefore, would be one that would meet and combat successfully each cause of death by (1) removing original foci and preventing spread of infection; (2) preventing and combating ileus; (3) protecting the nervous system; (4) nourishing patient and supplying deficiency of chlorides.

In outlining our present plan of treatment, we are aware that it sounds like a

radical departure from the present accepted plan of handling these cases, but we believe it meets, in a better and more sure way than any other method so far devised, the several requirements set down as necessary in attaining maximum results. In our hands our present regime of treatment has given far better results than the methods formerly used in the same class of cases. Our results are what make us bold enough to set forth this method as a superior one, though we are fully aware of the fact that the consensus of opinion today among the leading surgeons, is that conservatism even to the point of non-operation should prevail in the treatment of this condition.

Certain anatomical and physiological facts, we think, explain its rationality and will in a large measure account for the results obtained. In studying the blood and lymph supply of the peritoneum, we find the arterial and venous trunks with their accompanying lymph vessels and glands arranged along the vertebrae from the diaphragm to the pelvic cavity. Contrary to a well-established erroneous idea, absorption does not take place more rapidly around diaphragm and upper abdomen, but along the blood and lymph vessels in the back and pelvis. The peritoneal cisterns are also in back on each side of the vertebrae. These, with the pelvis, form pooling places for pus or fluids in the abdomen when the patient is on his back. This pooling in areas of greatest absorption certainly is not to the advantage of the patient and should be avoided if possible. Further study shows the diaphragm attached to the cartilages of the lower six ribs in front and as low as the second and third lumbar vertebrae posteriorly. This fact causes fluids to gravitate to these low places, forming pools when patient is supine.

Consequently, we do not offer our method as a radical procedure but as a conservative one, based on proper anatomical, physiological and surgical principles. Neither do we claim to have discovered anything new, but, having seen some of the fundamental principles of this regime used in other conditions with success, we decided to adapt them to this very distressing condition, which we have done with a very notable reduction in our mortality and with more comfort to our patients. If we allow for the largest possible error of judgment in the selection of cases, we have cut our mortality in two and if our judgment has been good in our selection of cases we have reduced our mortality 75 per cent in a total

of twenty-seven cases. We realize this number is too small for definite conclusions but in this number we have had but two deaths, one fecal fistula, and no hernias. One case was moribund and should not have been operated. This patient was operated under local anesthesia with a minimum of trauma but died two hours after removal from table. The other death occurred early in our series and it is probable that the drain was not properly placed. The fecal fistula ultimately healed without further surgery. All other cases escaped without any untoward complication, period in hospital was greatly reduced, and the illness attended with a minimum of discomfort.

Our routine of today was not adopted all at one sitting, but we have frequently added to and taken from and in many ways changed our procedure, and do yet, as occasion demands in any individual case, but these fundamental principles remain the same: (1) Abdomen is left open for rapid free drainage; (2) patient is placed on abdomen to assist drainage; (3) buttocks are elevated; (4) rectal alimentation is given and chlorides forced. We are not always able to determine the extent of involvement of the peritoneum previous to operation but if we are suspecting pus in the abdomen, arm ourselves with the proper equipment to deal with any emergency.

OPERATIVE TECHNIC

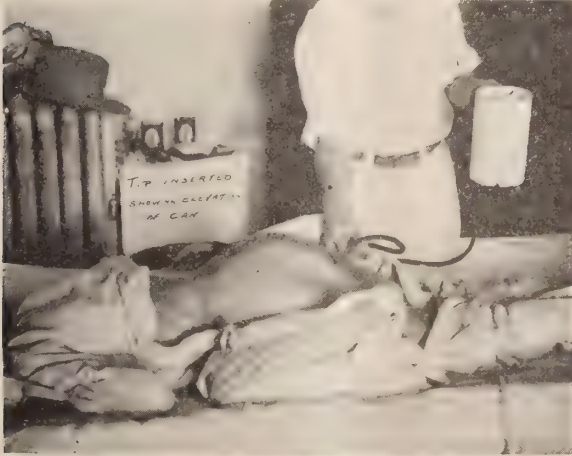
The usual incision is made approaching the pathology suspected. Survey of abdomen is made and original focus of infection is removed if it can be done without too great trauma to the viscera. If diffuse peritonitis is found, the original incision is extended, making opening from five to seven inches long. The peritoneum is dissected loose on each side, the full length of incision. This is then pulled up and out and attached to skin, throughout the extent of wound, with chromic catgut. This is done for the protection of the raw surface of the abdominal wall, as well as for future use. At this point the original focus of infection is dealt with.

Following this, a large piece of rubber dam with many perforations is laid over the wound and gently pushed into abdomen and filled with fluffed gauze in such a way as to hold all viscera within abdomen. In no place is the pack inserted deeply except in region of original focus of infection or in the pelvis, if there is a large accumulation of pus. No pus is mopped or swabbed out but every effort is made not to traumatize the viscera. No gauze is ever permit-

ted to touch the coils of intestines. No attempt is made to close the wound but it is purposely left open its full length. On top of large drain of rubber dam and fluff gauze, a very copious dressing is applied. If patient is under a general anesthetic, one or two quarts of saline is instilled into rectum while he is still asleep and before leaving operating table.

The patient is returned to bed and laid flat on abdomen, face to one side, arms in easy position about head, with legs arranged to suit the comfort of the patient. The main point is to keep the whole abdomen flat against the bed.

After a few hours (three or four) in this position, pillows are placed under lower abdomen and pelvis, raising buttocks high above rest of body, which position promotes escape of gas and allows easy instillation of fluid into rectum (see illustration) where



it is retained and absorbed in almost unlimited quantities. We use, largely, saline, with the idea of supplying deficient chlorides to the blood, as advocated by Orr, Babcock and others, but tap water and glucose solution may be used interchangeably with equal satisfaction, according to the indications. Why patients retain and absorb fluids better in this position can, possibly, be explained by the fact that water will run down-hill and the rectum being the highest point of the body in this position, fluids gravitate away from the sphincter into the full length of colon with its larger absorptive area and the desire to expel the fluid is lost.

Another thing this position does, which is of the greatest importance and comfort to the patient, is to prevent distention of the abdomen, or, if the abdomen is distended, it tends to reduce it. This is probably due, in part, to escape of gas per rectum, which so easily takes place with the vent at

the highest point, but we think that the very rapid drainage and consequent checking in spread of infection, together with the constant firm pressure being exerted on the abdomen, prevents distention of the viscera, thus avoiding disturbance of the circulation of intestines, which is recognized as an essential factor in the formation of ileus.

There are two other advantages of this position: (1) It places our large dressing at the most dependent portion of cavity to be drained. (2) It leaves the peritoneal cisterns and pelvic cavity high and dry instead of leaving them to act as cesspools in the area of greatest absorption.

An extra word about this method of drainage. We concede that the greatest amount of drainage from the peritoneal cavity takes place in the first twenty-four hours. Moreover, we have observed that most of the drainage by this method takes place in the first twelve hours. The reason for the very large drain is to obtain a maximum amount of outflow the first few hours before adhesions have walled off the drain. Biologically, our drain touches a comparatively large amount of viscera, causing a reversal of lymph circulation in nature's effort to expel the foreign body, and in this effort drainage is promoted.

The patient is kept in this position and the large drain left in place from one to several days. At the end of each twelve hours, patient is turned on the back and outside dressing removed. The gauze drain is saturated with 1 per cent sodium citrate solution, large outer dressing replaced and the patient again turned on abdomen, with an immediate flow of drainage. This procedure is repeated twice daily until such time as the symptoms justify a change of regime. Usually after twenty-four hours some of the gauze is removed from the drain at each dressing until we have only rubber dam left serving as drain.

The time of closure of the abdomen requires judgment but is usually in from forty-eight to seventy-two hours and is easily accomplished in bed under local anesthesia. The peritoneum is loosened from the skin and closed easily in the usual way. Only a small rubber dam drain is inserted for a few days; the remaining portion of wound is closed around the drain. Patient is again placed on his abdomen for the greater part of the time for a few days, being permitted to change his position more often and remain off his abdomen longer, until he has the freedom of his bed and can turn in any position he desires.

We might remark, in closing, that we have found that patients do not object to remaining on the abdomen for many days at a time. Furthermore, we have found that the elevation of the buttocks is applicable in all surgical conditions attended with ileus or abdominal distention and is so appreciated by patients with distention that, after having used it, they will frequently ask to be placed in this position on slightest discomfort from gas.

CONCLUSIONS

1. The mortality rate in diffuse peritonitis is too high.

2. Anatomical arrangement within the abdomen proves the theory of most rapid absorption around the diaphragm and upper abdomen a fallacy.

3. The long unclosed incision, with viscera held back by rubber dam and gauze arranged in form of large drain, superficially placed in abdomen, is not radical but efficient conservative surgery, taking into consideration both the biological and mechanical factors involved.

4. Placing the patient on abdomen with buttocks elevated and drain at most dependent part, promotes rapid drainage and prevents pooling of secretions at points of most rapid absorption.

5. Fluids administered per rectum will be retained and absorbed in this position in almost unlimited quantities. Distention is controlled, vomiting reduced to a minimum, obviating the necessity for frequent stomach lavage.

6. Patients suffer less, get well quicker and our mortality has been reduced at least 50 per cent in the twenty-seven cases observed.

DISCUSSION

DR. MEADE CLYNE, Tucson, Ariz. (opening): Dr. Thomas has had a very gratifying reduction in mortality. He has brought out some points that I am not familiar with, but in spite of this reported reduction in mortality, I am not prepared to accept the statement that absorption of the toxic material takes place more rapidly in the lower abdomen than in the upper. I should hesitate to place a patient who had had a recently ruptured gastric ulcer in the Trendelenburg position, even though the infection started in the upper abdomen. It seems to me that the mortality in these cases can be greatly modified by doing the least amount of surgery possible, with the smallest amount of manipulation. It seems to me that the proper treatment in these cases still is the sitting position with the proper drainage established in the pelvis, possibly with tube at site of the appendix and one in the kidney pouch, with some hot wet packs applied to the abdomen to promote immediate drainage; proctoclysis and hypodermoclysis as indicated, and morphine to give the patient comfort. This is a new procedure and I am not prepared to accept the theory or statement without some hesitancy, also because of the pain that some of these patients must endure in the abdomen, and pain certainly is a factor in the recovery of a sick patient.

DR. A. J. McINTYRE, Phoenix, Ariz.: Would like to say to Dr. Thomas that any one in medicine who goes after a thing the way he has, to reduce the mortality in peritonitis, deserves congratulation. If these results continue successful, as they have started, I believe a new field in surgery has been opened. We are always talking about conservation in medicine, but the radical man makes the advances. Treatment which is radical now may be conservative fifteen or twenty years from now.

DR. J. I. BUTLER, Tucson, Ariz.: I am reminded of a comment made at one of the large eastern universities, in talking over the educational difficulties encountered, that one of the problems was to save the students from the consequences of their own creative ingenuity. It may be that this is often the case in surgery. I have talked this matter over with Dr. Thomas, and in reporting better results, we must recognize the fact that these things have probably been gone through with before. Likewise, there must be an explanation which will tally with the results. I remember well the first report by Finney on peritonitis, with six cases and all were successful. He scrubbed the alimentary tract from one end to the other with gauze, taking off all the fibrin, in spite of which, the patient got well. He is very much chagrined now when that paper is mentioned, although in that series his results were striking. The question of posture has been gone through with, studied and tried. I remember very well in the Massachusetts General Hospital turning patients various ways, on the side, either end of the bed up, or either side up. We used the Mikulicz drain with the well-known pouch, which is almost identical with the one used by Dr. Thomas, though he uses rubber dam perforated. The best results from drainage in the after treatment were found to be multiple drains of rubber tube perforated as a rubber dam would be; placing secondary incision in the dependent portions of the abdomen where accumulations were known to occur; sewing up the original incision tight, making a secondary closure unnecessary and avoiding postoperative hernia. Patients were placed on the abdomen, which side depending on the location of the original infection. I have had no personal experience with Dr. Thomas' method, either leaving the incision wide open or placing the patient entirely on the abdomen. Theoretically, I should think the embarrassment to respiration would be a great objection to the prone position.

DR. WILLARD SMITH, Phoenix, Ariz.: Two or three things have occurred to me in connection with this paper. In the first place, the doctor spoke of conservatism. The true conservative is one who practices conservation; if Dr. Thomas saves fifty per cent of those who would otherwise die, that is conservatism. Second, Hilton told us about rest and pain; if you have a thing that hurts, splint it; Dr. Thomas splints the belly with the bed. Third, if you have something to drain, make a hole big enough to drain it through; Dr. Thomas has certainly done that.

DR. JOSEPH M. GREER, Mesa, Ariz.: Speaking about conservatism, it seems to me that Dr. Thomas' paper is not radical but really conservative. Apparently his method conserves lives anyway. The reason it appears radical at first, though, is because it is different. Many of these things have been done before. Many surgeons have placed their patients in different positions during their after treatment. Many surgeons have made large incisions, and many surgeons have left their incisions open. Dr. Thomas has very cleverly coordinated these different things in a systematic way and has been successful. The rationale of his treatment appeals to me all the way through, especially the lessening of septic absorption by not allowing septic fluid to collect in the back part of the abdomen. It

has been said that drainage is more physiological than mechanical, but I do not see why, in the first twenty-four hours anyway, the position as used by Dr. Thomas would not lend a great deal of help to the drainage problem.

DR. H. T. BAILEY, Phoenix, Ariz.: I think Dr. Thomas should be complimented on bringing this paper before us. I should like to ask Dr. Thomas whether, after a mastoid operation, for example, if one should wish to give proctoclysis, the position described would not answer better than the old time position.

DR. H. A. REESE, Yuma, Ariz.: Would like to ask what has become of the duodenal tube and duodenal drainage in such cases?

DR. J. I. BUTLER, Tucson, Ariz.: One more point in posture. The elevation of the pelvis can be accomplished by raising the bed instead of raising the patient. If you want the buttocks in the air, you can get the same results by raising the plane on which he lies. What, then, is the explanation of the superior end results which Dr. Thomas reports? Not in increased drainage which does not take place after the first postoperative three to six hours; not in decreased lymphatic absorption, because that is, in fact, facilitated by the distribution of pus over the absorptive lymph capillary area of the mesentery, which the abdominal posture obviously encourages. The other possible explanation which occurs to me is suggested by the observations in fluoroscopy of the large gut during instillation of a barium enema. There is a distinct obstruction seen, even in normally flexible intestines, as the enema traverses the pelvic brim, with the patient on the back; this difficulty must be much greater with a distended, edematous intestine, as is present in peritonitis, and the kinking must be lessened by the prone position. It is possible that position alone, without the open incision, may yield equally good results.

DR. WILLARD SMITH, Phoenix, Ariz.: Since Butler has talked again, I want a second deal. Go back to first principles again. Since the belly was built for a quadruped, you must get the hind legs up, for physiological effects.

DR. R. D. KENNEDY, Globe, Ariz.: Dr. Thomas' operation and procedure is mechanically correct. I do not, however, believe his low mortality is due to the causes to which it is attributed—that the lower bowel is a cesspool. It is true that we get considerable absorption from there but not of toxic products. Nature has not given us a very abundant lymph supply along the lower bowel, and infection does not spread from the large bowel as it does from the small bowel. For that reason we have such a slow development of diverticulitis and other lesions along the large bowel. Our absorption takes place higher up. These patients do not die from absorption of toxins but from the breaking down of products in the small bowel due to ileus.

DR. C. E. YOUNT, Prescott, Ariz.: I think that Dr. Thomas should be congratulated on being able to bring this report in which he can show such results. All of us are not so fortunate when we begin to modify some procedure. Should like to know whether there is any extrusion of the intestine in that position, whether they can be retained and what effect he has noticed from stitching the peritoneum to the skin. What effect does the thickening of the peritoneum, which results from such transplanting, have in producing hernia or closing the wound?

DR. GEORGE A. BRIDGE, Bisbee, Ariz.: I had the privilege of reading this paper last night and was struck with the originality of the procedure. We have had good results with the old method of the Fowler bed, Murphy drip and thorough drainage. Many surgeons like me, have had the experience of closing these wounds too tight, and though

you may not lose the patient, you will have Nature's remedy of opening the wound wider. I asked Dr. Thomas last night the same question asked by Dr. Yount, as to the difficulty he had in retaining the intestines. He seems to have had very little difficulty. The rubber dam he uses he pushes well under the margins of the abdominal wound and on top of that the dressings, also well under the margin. I wish to congratulate him on this original operation and procedure following operation.

DR. A. B. COOKE, Los Angeles, Calif.: I have been much interested in this proposed modification of the position for drainage which is more or less familiar. In my own general work I have used the Sims position with elevation of the bed, turning the patient partially on the side. The title of this paper as originally published was "Generalized Peritonitis." No case of generalized peritonitis gets well, no matter what procedure you use; if it is generalized in the proper translation of the word, that patient is doomed. Dr. Thomas, in discussion, used the term "diffuse peritonitis," which is a very different thing. One of the speakers referred to the Kansas City idea, which I believe is correct, that in these cases of diffuse peritonitis, where much area is involved, the thing that kills is the absorption because of the ileus of the small intestine. I think the idea advanced by the gentleman in Kansas City, of jejunostomy and placing a tube in the proximal portion of the small bowel, with the use of copious saline, is a life-saving matter. The methods of drainage outlined by Dr. Thomas are very excellent, but sometimes we do not have the means of constructing the perforated coffer dam. I recall operating on a close friend of mine for a ruptured diverticulum with diffuse peritonitis involving the lower half of the abdomen. I wanted to drain and used a pair of rubber gloves, spreading the fingers out below and leaving the wrist portions protruding and leaving the wound open. You have the ready means at hand always for adopting this procedure where you feel it is necessary.

Any man who has handled this class of cases as Dr. Thomas has and can show twenty-seven cases with a mortality of two, is entitled to consideration when he describes his method, because diffuse peritonitis usually has a mortality of fifty per cent. All kinds of bizarre ideas have been advanced, not to be classed with this rational one of Dr. Thomas. Some will recall that some fifteen years ago a Memphis surgeon advanced the idea in these cases of pouring the abdomen full of tincture of iodine and said that he had no deaths at all. Others have advanced the idea of pouring the abdomen full of ether. We must credit the statistics, but cannot tell how much the personal equation of the operator enters in, and I feel that I must sound this little note of warning, that I do not think the ideas advanced by Dr. Thomas, since general surgery has become so very general, ought to be adopted by the rank and file of us, because lack of familiarity with the method may cause us to fail to get these results, and perhaps inflict injury upon our patients.

DR. THOMAS, Tucson, Ariz. (closing): I wish to thank the gentlemen for the liberal discussion, and there are a few things I wish to emphasize.

Dr. Cooke mentioned jejunostomy. We have had occasion to perform this since we have been using this method, and we very seldom use the stomach or duodenal tube. That is one of the things we have been able to avoid in most cases.

In regard to the extrusion of the intestines, we have no trouble whatever; they stay back after the first twenty-four hours without any trouble. In one case, at the end of the first day, I removed some of the gauze and a few hours after that had occasion to do stomach lavage, and did have a small knuckle of intestine extrude, but that is the only case.

Maybe the long incision is not the essential point in our regime, but one thing is certain and that is that you can pour into the rectum all the saline and glucose solution you wish. You can fill the patient with fluid; you can put in ten or twelve pints in twenty-four hours and it will stay. A pint every two hours is the routine after the initial quart in the operating room.

I got my authority about absorption in upper part of the abdomen from Hertzler and Deaver; I got the original idea there and do not have any hesitancy in accepting their teaching. I should like to pay respects to the Fowler position; if anyone ever got more than a quart of saline to be retained in the Fowler position in twenty-four hours, he has done better than I have.

With regard to pain in this position, patients are more comfortable than when they are sitting up with the belly distended. On the belly you do not get the distention, and if distention develops and you place them on the abdomen, the distention becomes gradually less. I should like to emphasize the point that we get rid of gas in this position, not only in peritonitis, but any postoperative distention can be relieved by this position. In one case we gave several enemas without results; following these the buttocks were elevated, and in a few minutes the enema and all went out with the gas. When you elevate the buttocks sufficiently, the gas seeks the high level and will go out. We use the position in any postoperative case with distention. Pain is minimized and the patients are comfortable. They think they are not, but if you turn them face up, they will soon ask to be turned back on abdomen. We always use morphine and do not depend entirely on posture, but the dose of morphine is small, usually one-sixth or one-eighth grain is all that is necessary. We lay great stress on saline and use large quantities. We use sodium citrate on the dressings, as we have done for many years. It keeps the secretions that accumulate on the dressings from becoming hard, and by keeping them fluid drainage is promoted.

REPORT OF SIX UNUSUAL CASES

M. C. COMER, M. D., F. A. C. S.

Tucson, Arizona

Read before the Thirty-sixth Annual Meeting of the Arizona State Medical Association, held at Yuma, Arizona, April 21 to 23, 1927.

The average man is so constituted, intellectually, that anything out of the ordinary is welcomed as a happy break in the corroding monotony of daily life. By the unusual, our imagination is intrigued and, through curiosity, interest in our work is revived. Without further preamble, we can proceed with

CASE No. 1.

Screw-worm Infestation of the Nares.

A. E. C., aged 37, railroad brakeman, was the patient. Personal and family history was unimportant. On Friday, during the noon hour, he was sleeping beside a work train at Antelope Quarry, which is foothill country. He was awakened suddenly with a violent attack of sneezing. He reported for treatment Saturday night, to Dr. C. A. Thomas, complaining of nasal occlusion, discharge, and intense headache over frontal region. He was admitted to the hospital Sunday morning, at which time I first examined him.

The discharge from his nose was copious and sero-sanguinous in character. An overpoweringly fetid odor was noted, even at a distance of three or four feet. Monday morning, at my office, we verified a provisional diagnosis by removing 130 screw-

worms from the nasal septum and adjacent tissues. The patient had a very large septal perforation with ulcerated edges. During the succeeding three or four days we removed about forty-five more worms, about 175 in all, and discharged patient after one week, recommending at least one more week for convalescence.

The screw-worm fly is very common in certain sections of the southwest and seems to be especially bad in the foothill countries. The fly lays its eggs in living tissue, the eggs hatching a few hours thereafter. Instances of screw-worm infestation of the nares in man, are not uncommon and every doctor whose sojourn in the southwest has been at all extensive, knows of, or has treated, one or more cases. Screw-worm infestation of the nares requires, first, a pre-existing break in continuity of the nasal mucosa, and septal perforations, with their ulcerated crusted edges, offer a fertile field in which the fly may lay its eggs when given a favorable opportunity.

I wish to call your attention to the three main diagnostic points that label it beyond peradventure of a doubt: The continual and copious flow of sero-sanguinous fluid; the repellant, cadaverous odor that makes our labor with these cases such a trial; and, finally, the wiggling worm itself. The nasal discharge and odor will be sufficient evidence for diagnosis and your hand automatically reaches for the chloroform bottle to remedy that which your eyes and nose tell you to be insupportable with social existence. Chloroform, applied with cotton-wound applicators, quickly kills the worms and also serves as a very good local anesthetic. With the aid of a good light and long nasal forceps, the dead worms can now be removed. Potassium permanganate irrigations will help to rid the nose of necrosed tissue and will very materially reduce the odor. If your sense of the esthetic allows enough patience, you may, sometime within a week, return the individual to society with a nose not a great deal the worse for its experience as a fly incubator.

CASE No. 2

Persistent or Patent Thymic Duct.

Mildred, aged 5, was always well. When she was three days old, her mother had noticed a small crust on the front of her neck, to the right of the midline, in the infrathyroid region. At the time, this was thought to be due to a wound from pin used in clothing and was treated accordingly. About March 20, 1925, it was seen by a specialist but a definite diagnosis was not made. In July of same year an attempt was made to close what probably resembled, at that time, a sebaceous cyst. The parents were then advised that the trouble was due to adenoids and tonsils, and they were removed in November, 1926. The trouble remained unimproved. Some months later the child was referred to me for observation, by Dr. R. K. Smith.

In the infrathyroid region on the right side, was noted a small opening in the skin. The mother states

that in hot weather there is quite a lot of discharge of a muco-purulent nature, sufficient to soil clothing. There has never been the slightest sign of inflammation and no swelling except an occasional bulging preceding a period when discharge is noted. The mother has an opening at the same point in her neck, which leads to a small pocket from which she is occasionally able to express a small quantity of milky fluid.

It so happened that quite recently I had read an article by Dr. Rudolph Kramer¹ of New York, published in the *Laryngoscope*, entitled "Lateral Cervical Fistula." This article was a report of a case almost identical with the case I am bringing before you and for that reason I was stimulated to further study of this condition. Through the opening in the skin we injected lipiodol, most of which passed through into the mouth, but a sufficient amount was retained in the tract to show up well in the picture.



Fig. 1 Case No. 2). Persistent or patent thymic duct, outlined by opaque injection. This fistula is complete.

Quoting from Dr. Kramer's paper:

"Until 1913, branchial or lateral cervical fistula was thought to be due to failure of closure of one of the branchial furrows, but at this date Wenglow-sky demonstrated the condition to be a patent thymic duct. This duct usually becomes obliterated about the sixth week of foetal life, starting from above downward.

"The fistula may remain complete or incomplete, internal or external.

"The external, or cutaneous, opening is on a line parallel to and overlying the anterior border of the sterno-mastoid muscle. The internal opening is either on the posterior palatine arch or directly in front or behind it.

"The treatment consists of complete dissection of the entire tract or the injection of chemicals in an effort to obliterate the fistula. The surgical procedure is fairly extensive, somewhat deforming and often unsuccessful."

Women, especially, do not easily forgive an eschar on the neck and, as the symptoms are not usually troublesome, they prefer to let well enough alone.

In a recent letter from Dr. Kramer he advises the injection of 100 per cent trichloroacetic acid. When my patient has reached an age when she can cooperate, this procedure can be carried out, provided the injection be from above downward, otherwise there would be too much danger of the solution entering the mouth and doing some damage.

The report of a case like this is valuable only in that it demonstrates the efficacy of the x-ray as an aid to diagnosis and reveals to us one of nature's blunders which, after our curiosity is satisfied, can be regarded only as an oddity.

CASE No. 3.

Sudden Death in a Child, Due to Ingestion of Uncooked and Over-germinated Beans.

R. H., aged 5, was always healthy. Family history was not obtained. He awakened nurse in the night with a peculiar gagging cough. This was repeated at another time during the night but nothing was thought of it. The next day he vomited once but there was no further cough and no hoarseness. The second night passed with but one disturbance due to the same peculiar cough or retching as in the preceding night. The next, or third, day he vomited once and seemed to be feeling all right. He was put to bed at about 7 p. m., but asked for a drink of milk, which was given him. He apparently strangled and was unable, or unwilling, to finish drinking. He lay down and turned his face to the wall. The nurse waited a while and then, thinking him asleep, left him. At about nine o'clock he was found in same position, dead and almost cold.

This case is reported for two reasons: first, because of a possible similarity to so-called thymic death; and, second, because of its rarity—if our diagnosis was correct.

I wish to state here that I believe many of the sudden deaths in childhood are ascribed to enlarged thymus merely because of a natural disinclination on the part of the physician to acknowledge that he does not know the cause of death. Medicine is far, indeed, from an exact science and we will lose no cast or dignity if we admit that we cannot always gage the balance maintained between life and death in any individual. In many cases it is far easier to fit the disease to the symptoms than the symptoms to the disease.

Postmortem findings in the case under discussion did not reveal any gross pathology in any of the viscera, nor any enlargement of the thymus. The only thing of which we felt at all positive was that death was due to the ingestion of some poisonous substance. The child's diet was that shared by other children in the house, with one sole exception. One of his playmates inno-

cently stated that he had seen this child eating raw sprouted beans three days before death. We passed this statement over without thought or comment, knowing, as we did, that sprouted beans were supposed to be rich in vitamins and, therefore, should be a valuable food.

It was only after reciting the case to Dr. R. K. Smith, our pediatrician, and being supplied by him with the proper reference that we were made to see it all clearly. From the Medical Interpreter², we note the following under the head of Vitamins:

"Cereal grains and legumes are entirely lacking in anti-scorbutic vitamins but do contain in their outer covering considerable amounts of anti-beriberic vitamins. If, at the end of three days after germination, grain is fed to animals, scorbutic symptoms are delayed, which action is attributed, by Furst, to a transformation of the anti-beriberic vitamin into anti-scorbutic vitamin, or water-soluble C."

"Germinating seeds for use in feeding should be allowed to remain in water for 24 hours and afterwards folded between moist leaves of bibulous paper at ordinary temperature. At the end of three days, lentils (beans) are boiled for 20 minutes." Experiments have shown that, when fed to animals, "the young buds of seven days germination produce a violent intoxication and death in from three to five days."

This latter paragraph is qualified by the statement that, "if we supplement the above regimen by normal grain or that which has undergone three days germination, nothing abnormal occurs. It seems that the toxic properties are neutralized by the anti-scorbutic substance."

Have we misinterpreted these statements and are we in error when we attribute the cause of death, in the case reported, to gastro-enteric intoxication due to the ingestion of uncooked and overgerminated beans? It is an interesting question to think about anyhow, and might stimulate an impulse in some of us toward a period of research, if only to prove that I am wrong.

CASE No. 4

Acute Pericarditis with Effusion, A Sequel to Sinusitis.

R. S., aged 35, married, male. Family history not obtained. When the internist was called, the patient was found to be suffering from an intense anginal pain over the precordia and radiating to the left arm and shoulder. His facial expression was very anxious and he felt convinced of imminent death. The pulse rate was 140, but regular. The temperature was 102 degrees; face was beaded with perspiration. No extensive examination was possible or advisable at this time, all efforts being directed toward making the patient more comfortable.

The next day a well marked friction rub could be

heard with each heart impulse, the temperature remaining at 102 degrees and the pulse at 120. Pain was not so intense, probably due to the anodynes prescribed. By the third day the friction sound had completely disappeared and the heart sounds become distant. Percussion showed increase in size of heart outline. Pain had entirely disappeared and the only sense of discomfort was a slight feeling of oppression.

Ten days after the initial attack, the patient was referred to me for report on tonsils and sinuses. Tonsils were apparently normal but the sinuses on the left were suspicious. X-ray findings were: Left antrum cloudy almost to capacity; left ethmoid slightly cloudy; the sinuses on right were clear.

Preoperative diagnosis was pansinusitis, left, and pericarditis with effusion. Left antrum was entered with trocar under the inferior turbinate and irrigated. A large amount of foul-smelling miscible pus was evacuated. Irrigations were repeated daily until the returning solution was clear for three consecutive days and again after one week, when all evidence of infection had disappeared. The nose at this time appearing normal, the ethmoids and sphenoids were not disturbed. The heart condition had completely cleared up and the patient was happy. He was discharged with no assurance that condition would not return.

The best thing about this case would seem to be the happy ending. We might draw a valuable lesson from its consideration, in that the para-nasal sinuses should never be overlooked when searching for a focus of infection. In spite of the fact that so much stress is being laid on this subject—that books are being written all over the world regarding disease in these structures—consideration of the sinuses as possible primary foci in infection, is being sadly neglected and, in many cases, totally ignored.

We are very fortunately situated, in Tucson, in regard to the clearing up of respiratory infections. Sinuses, especially, yield most kindly to a line of treatment that, in other localities, with increased humidity and greater extremes in temperature, would prove a failure. Radical operative measures are the exception there and, should the condition be such as to demand such a procedure, then quite likely the patient will not be improved thereby. The failure to cure in these cases is no doubt due, in great part, to the probability that the sinus pathology is not a separate entity but a part of some constitutional disorder by which the resistance is held below par and involution of the local disease process made an impossibility.

Surely the sinuses with their great absorptive areas, deserve equal attention with teeth and tonsils.

CASE No. 5.

Death Due to Furuncle of Anterior Nares.

Mr. X., aged 30, married. Family history unimportant. Complained of severe pain and swelling in and about the vestibule of left naris. Inspection revealed a deep-seated local infection near tip of nose, which was open and discharging externally through

skin. The left side of face was badly swollen and the patient looked very ill. On questioning, he admitted that he had been squeezing and picking at the lesion in an effort to evacuate the pus. A dressing of phenol, ichthyol and glycerin was applied and patient was advised that he had been very unwise in traumatizing the furuncle and that the condition was serious.

I never saw him again but was very kindly furnished the record of his terminal illness by the attending physician. His death occurred within a very few days after his visit to my office and the records show a typical picture of general septicemia involving the peritoneum and ending in pneumonia. Had a necropsy been held no doubt there would have been revealed a septic thrombosis of the cavernous sinus with septic infarcts in the lungs, kidneys, spleen and heart muscle.

This case is reported as an example of the fact that small furuncles about the upper lip and nares may produce very serious complications. Dr. J. William Hinton³, of New York, has this to say regarding the danger of infection about the face:

"In active hospital service one sees one or two deaths yearly from maltreated face infections. The fatalities do not result from medical procrastination, but from overzealous surgical intervention. The danger of infection is producing a thrombophlebitis of the facial vein, with a resulting cavernous sinus thrombosis."

Dixon⁴ cites four factors in the production of complications in this locality: First, early and frequent trauma; second, absence of subcutaneous fat on the upper lip; third, active muscular supply of this region; fourth, inability of the veins that drain this region to collapse. In regard to the facial vein, Gray⁵ states that it is not so flaccid as most superficial veins, has no valves, and communicates freely with the intracranial circulation.

"These facts have an important bearing upon surgery of some diseases of the face, for, on account

of its patency, the facial vein favors septic absorption and, therefore, any phlegmonous inflammation of the face is liable to set up thrombosis in the facial vein, and detached portions of the clot may give rise to purulent foci in other parts of the body."

In the drawing you will note the distribution of the venous blood supply about the face and can see a direct connection from the facial vein to the cavernous sinus. You will note one heavy outlined area about the upper lip and nares which Dr. Hinton designates "the critical area of face infections." The light dotted area is the danger zone of face infections, the venous drainage of which connects with the cavernous sinus.

Any infection about the danger zone should be treated as if it might become a dangerous disease and traumatism by squeezing or small inadequate incisions should be avoided. This is one condition where a poultice is justified. The infection usually localizes with conservative treatment and will, in most cases, spontaneously perforate through the skin or mucous membrane.

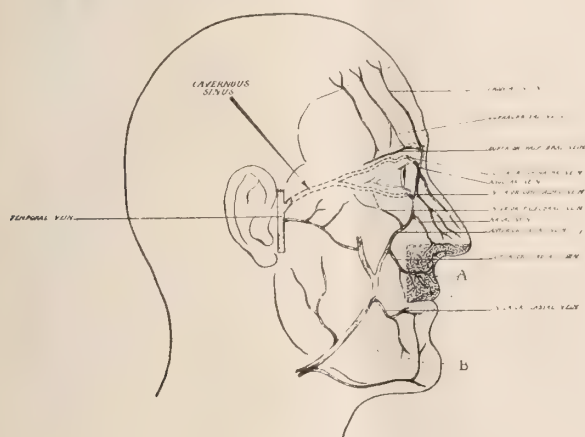
I wish to say that the drawing exhibited is a copy from an illustration used in Dr. Hinton's article and is not original in any particular.

CASE No. 6.

Mastoiditis, Acute Purulent, without Demonstrable Pus in Middle Ear.

Miss R., aged 15; family and personal history unimportant; came complaining of severe pain in and about left ear, of three days duration, following an attack of influenza. A variety of home remedies had been used with no results. Inspection of ear revealed a perforated drum with a slight amount of pulsating fluid, serous in character. No bulging of the drum was noted, in fact, the membrane seemed rather flaccid. The posterior-superior wall of the canal was markedly drooping. Pain was constant, intense, involving the whole side of the head and unrelieved by any medication to ear. Deep pressure over mastoid antrum, the emissary vein and tip, revealed extremely tender areas, that over the tip perhaps being the worst. The temperature by mouth was 100 degrees, 6.; pulse, 124. The blood count showed: leukocytes, 8,550, with 79 per cent polymorphonuclears. X-ray findings were: All cells cloudy with a particularly dense area at one point.

The blood picture would go as well with an ordinary purulent otitis media and is that which we would expect in an acute uncomplicated mastoiditis. The ratio between the pulse and temperature ran true to form and only the ear with the discharge was out of tune with a typical mastoid. Had the discharge ever been appreciable in amount and had it ever been purulent in character, then, truly, would the picture have been complete. In practically all severe cases of purulent otitis media, the mastoid is affected in varying degree. All "running ears" should be regarded as possible mastoids that may require operation and we should be on guard for the danger signals that, once rec-



A - HEAVY DOTTED AREA AROUND NOSE AND UPPER LIP IS THE "CRITICAL AREA" OF FACE INFECTIONS.

B - LIGHT DOTTED AREA IS THE DANGER ZONE FOR FACE INFECTIONS.

Fig. 2. Case No. 5). Illustration from article by Dr. J. W. Hinton, *Annals of Surgery*, Jan., 1927). Area (A), marked by heavy dots around nose and upper lip is the "Critical Area" of face infections. Area (B), marked by lighter dots, is the danger zone for face infections.

ognized, allow for no procrastination. The sudden stoppage in drainage, the increase of pain and jump in pulse rate with a possible elevation of temperature, changes the ordinary discharging or abscessed ear into a mastoid that is going to need attention.

This case presents one or two peculiar angles from the standpoint of diagnosis and indication for operation. It is different from the routine case of acute mastoiditis in that, although the tympanic membrane was perforated, the only discharge ever found in the external canal was a very small amount of pulsating serous fluid with never the slightest admixture of pus. With this picture in mind we had reason to believe that we were dealing with a streptococcal infection and, in all probability, would not find occult pus in the mastoid cells.

At operation no infection could be demonstrated in or about the antrum, but when we uncovered a large cell near the tip, pus under pressure made its appearance. The pyogenic membrane lining this cell was curetted out en masse and, in line with the present trend of opinion regarding simple mastoidectomy, we assumed the operation to be complete, conquering the desire to break down all cells and leave the bone wound smooth. We felt that in this case the foci of infection had been reached and dealt with, we had convinced ourselves of the patency of the additus ad antrum and were assured of ample drainage. From experience we knew that granulations would spring much more easily and quickly from the rough interior of the bone than would be the case were it overoperated by any polishing procedure.

Whether to operate or not and, if so, when, is an individual problem in every acute mastoid. When you are satisfied that drainage is insufficient then operation is in order. Experience plus the personal equation in both surgeon and patient, seems to furnish the only real qualification for a suitable rule to guide us when trying to decide what is best for the patient.

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DISCUSSION

DR. JOHN J. McLOONE, Phoenix, Ariz. (opening): Dr. McLoone was supplied with a copy of this paper, by the author, prior to the convention, and submitted the following discussions:

Case 1. Cases of screw-worm invasion of the nose

that present themselves early are easily and satisfactorily dealt with. The outlook is more serious in others which do not come under observation until extensive destruction of tissue has taken place. I recall one case in which the maggots had pervaded the ethmoidal regions to such an extent as to effect their almost complete destruction, and found their way into the sphenoid and frontal sinuses. The patient was toxic and at times delirious. During several sittings, almost 200 worms were removed from ethmoidal regions and neighboring cavities. I recently treated a small child whose external auditory canal was found filled with screw-worms.

This distressing affection is most commonly met with in those who are already the victims of ozena, syphilitic disease of the nose, and other purulent nasal affections, the flies being attracted by the fetid odor to deposit their eggs in or near the nasal cavities.

Case 2. The thyro-glossal duct is an obsolete embryonic canal, extending from the foramen cecum, at the base of the tongue, downwards behind the hyoid bone, to terminate underneath the deep fascia in the front of the neck, in the neighborhood of the thyroid isthmus. A fistula or a cyst, when it calls for treatment, must be carefully dissected out in its entire course. Failure to obtain a perfect result is generally due to the difficulty of following the duct behind the hyoid bone.

Case 3. In view of the negative postmortem findings, I believe the essayist is correct in his diagnosis. Occasionally we see patients in need of removal of tonsils and adenoids, whose appearance would indicate a generalized lymphoid enlargement. It is advisable in those cases to have an x-ray made before doing any surgery, to determine if there be present any enlargement of the thymus gland.

Case 4. Cardiac disturbance due to sinus disease, though rare, does occasionally happen, and the recognition of the sinuses as foci of infection was certainly a fortunate circumstance in this case. I quite agree with Dr. Comer that the nasal accessory sinuses are too frequently overlooked as possible portals of entry for systemic infections.

Case 5. It is hardly necessary to emphasize the importance of avoidable incisions for nasal furunculosis. It is my practice to use dry heat or bichloride compresses in these cases. A combination streptococcal and staphylococcal vaccine is also beneficial.

Case 6. The interesting point of Case No. 6 is the absence of typical middle ear symptoms, though the other classical signs of a mastoiditis are quite well defined. From the amount and character of pathology found at operation, I would judge that his mastoid infection occurred possibly several weeks previous to the onset of pain, or that there had been some ear involvement at a former time, in this manner making the mastoid less resistant to subsequent infection.

A very marked middle ear suppuration may be a concomitant symptom of mastoid disease, or there may be no history of middle ear disease, no discharge at any time, and no perforations in the membrana tympani. I recently had a case in which the only symptoms were tenderness over the antrum and pain radiating over side of face. Operation disclosed extensive pathology throughout the mastoid process.

Absence of pus in the middle ear can be explained by there having been a previous infection in the tympanic cavity by way of the eustachian tube. After the bacterial process has extended into the antrum or mastoid cells, the infection in the middle ear becomes quiescent, while the bacterial invasion still continues in the smaller cellular spaces.

DR. H. T. BAILEY, Phoenix, Ariz.: I want to emphasize what Dr. Comer said about symptoms, when he was discussing his first case. When your patient comes, he will have a sero-sanguineous dis-

charge, with headache, and may have pus or mucus exuding from the nose. You will likely get a history that yesterday, or two days ago, he was sleeping some place in the open, either in a room without screens or outside. If you look further you will often find that this patient had an atrophic rhinitis with scabs or an ozena of some type, with the odor which goes with it, perhaps only an eczema or common form of catarrh of the nose.

I have had a few experiences and might relate one or two. A white girl 12 or 13 years old, daughter of a dairyman. The children help milk the cows and as they work very early in the morning, they get tired and take naps in the afternoon. This girl came in with a discharge, headache and the other symptoms spoken of by Dr. Comer, and twenty-three worms were recovered. One of my first cases, about 12 years ago, was a white boy with a serosanguineous discharge, headache, high fever, delirium, and in coma part of the time. From this child we recovered 293 worms, not all from the nose; some had passed into the stomach; recovered eight or ten from the feces by watching the stools. I took some of these worms, made up some chicken broth with a few pieces of the meat, put this in a jar with the worms and in eight days had just so many nice green flies. A word about the flies: we get the screw-worm proper from the blow-fly, using the word of the cattle men. It is a large fly intermediate in size between the house fly and the horse fly. When he gets into a residence, he buzzes almost as strong as the horse fly. This fly, instead of laying eggs, lays worms. If you have a wound or any fetid material, the fly will lay its worms in it, and as soon as they are deposited they will begin to crawl. The green fly lays eggs and it takes some hours for these eggs to hatch. The worms in the first case reported above were from the green fly. Just two years ago I had a Mexican child brought from Chihuahua; some one saw her and thought she had meningitis from the symptoms; the child was very sick and toxic, and from her we recovered 123 worms which seemed to be of the screw-worm type. Dr. Stroud is to have a paper on this subject and he will tell us something about the points of difference between the worms. The name "screw-worm" was given by the cow men of Oklahoma and other southwestern states, where they did so much injury to calves that had been castrated, and is due to the boring motion and the resemblance of the body to a screw. In getting the worms of the nose, my experience has been that when the light is thrown into the nostril, the worms will begin to move and they are then easy to see and pick out.

DR. R. D. KENNEDY, Globe, Ariz.: Confirming what Dr. Bailey said about the flies depositing live worms: I had a patient who, after sleeping half an hour, woke up, sneezed and blew a fly out of the nose. Within half an hour he was in my office and in the nose, which was perfectly healthy, there were about a dozen small live worms.

DR. J. I. BUTLER, Tucson, Ariz.: One point I wish to bring out in the treatment of such meningeal conditions as apparently followed this infection of the face. We know that destructive pathology depends on stagnant circulation and the method has application in other edematous sluggish circulatory conditions. I refer to the use of fifteen per cent sodium chloride solution as a depleting measure for any edematous tissue, particularly in locations that are inaccessible otherwise; for instance, all meningitis and encephalitis cases, alcoholic and wet brain cases, conditions that are entirely inaccessible to therapeutic outside of this method. In brain surgery cases, a tense brain becomes flexible and permits manipulation. Possibly it could be, and should be, used in mental cases, especially acute conditions due to intracranial pressure. It could be used in

thrombosis, sinus cases and any condition where tissue depletion is indicated.

Question: How do you use that solution? Answer: Intravenously, 100 c.c. of fifteen per cent sodium chloride.

DR. COMER, Tucson,—no closing discussion.

MYIASIS IN THE SOUTHWEST, WITH PARTICULAR REFERENCE TO THE SPECIES *CHRYSOMYIA MACELLARIA*.

R. J. STROUD, M. D.
Tempe, Ariz.

Read before the Thirty-sixth Annual meeting of the Arizona State Medical Association, Yuma, Arizona, April 21 to 23, 1927.

When death occurs from an unusual cause, more interest is manifested in that cause than when it occurs from common diseases. Even if a death did not occur, the fact that sixteen cases of "screw worm disease," none of them referred cases, have been seen by a general practitioner in thirteen years, brings to us in the southwest the fact that these cases are common.

Myiasis is a fairly common disease which, in this continent, is prevalent from Canada to Patagonia, and which is more frequently encountered in altitudes below seven thousand feet, and especially in the hotter portions of the countries involved. In this southwest, the hottest portion of the United States, the occurrence is greater than in other parts of the country and it behooves us to be on the alert, not only to diagnose and treat early, but to urge preventive methods for its control.

Several species of flies have been known to cause the disease. *Sarcophaga* have been known to deposit eggs or larvae in the body cavities. *Stomoxys calcitrans*, which is seen in stables, usually attacks mammals and may attack man. The common housefly may cause myiasis mucosa, and the bot-fly or gad-fly, myiasis cestruosa, causing symptoms, especially in horses, by being parasitic in the stomach; this has been known to man also.

The species which causes most of the trouble and which uses man as a special host is the *Compsomyia macellaria*, or *Lucilia macellaria*, or more commonly known as *Chrysomyia macellaria*. (See figure.) This species shows a distinct preference for the nasal cavity, although often attacking the aural cavity, or any other part where the skin has been punctured, especially when ulceration is present. The fly is attracted by the foul odor of catarrh or pus and usually deposits eggs, but has been known to deposit larvae in the parts. It takes but a few moments for this to be done, and flies have deposited eggs or lar-

vae without alighting, while still on the wing. Eggs deposited by the fly hatch out in one hour. They can make their way into the sinuses, middle ears and brain cavity. The pupal stage is reached in eight days, with a subsidence of symptoms if the patient should live that long.

While foul odors and infected places are usual, a great percentage of cases are "blown" which have been free from disease. It has been claimed that syphilis was always present, but this is not borne out by my own observations or that of others, although syphilitic rhinitis would certainly attract the flies. Ballenger mentions a case of bone necrosis from syphilitic rhinitis in which a man inhaled a fly in one nostril and immediately blew it out of the other, but became infected. Ulcerated superficial cancers are prone to be affected because of the odor present.

Most of the infection occurs while the person is asleep, and all of the nasal cases in my series have been in Mexican people who sleep in the open, often in the daytime. Most Indians and a goodly percentage of Mexicans get along very peaceably with flies, and make little attempt to control them in or out of their dwellings. These houseflies make it easy for other species to pester them unmolested. Besides this, the "jerky" meat, which hangs in most Mexican houses of the lower class, would attract these flies.

SYMPTOMS

Within twenty-four to forty-eight hours, when the nose has been attacked, there is noticed a "fullness" between the eyes, accompanied by pain. The pain and swelling are more to the side which is affected. This is accompanied by a thin watery, bloody discharge, which increases until the severity of symptoms, or the spitting or sneezing out of one or more larvae, brings the patient to a physician. The bloody, watery discharge is the most characteristic early symptom. The pain and swelling are variable, being much greater if the larvae have gone below the mucous membrane and are burrowing there. The larvae develop very rapidly, being, in twenty-four hours, only one-fourth inch long but growing, in three to four days, to an inch, with a diameter equal to their length the first day.

Examination at this time will disclose a very foul odor, as a rule, with the larvae seen in motion in the affected side of the nose. When the larvae are not seen, a sense of movement in the nose is seen, which clinches the diagnosis. Fever of a mild degree is common, but in the virulent

cases it is high, reaching 104 degrees. Restlessness is common because of pain and the larval movement. Photophobia and conjunctivitis may be present.

When the larvae have been removed, the nose still looks broadened, due to the disturbance of the parts which have been stretched to accommodate the ever-growing mass of worms. The septum is usually forced towards the opposite side and ulceration is generally present. All of this clears up quickly as soon as the worms are cleared out and simple washes are used. The septum can be replaced easily by pushing from the opposite side and leaving a plug of gauze in for twenty-four hours.

TREATMENT

As soon as the worms are discovered, they should be treated with chloroform douches, 25 per cent to full strength, simple douches and forceps. Most of them can be reached by forceps, and plugging the nostril with cotton saturated with chloroform will kill the rest, which will be coughed or sneezed out in a day or so. In children, chloroform should be given to cause anesthesia in order to remove the worms by forceps. Carbon tetrachloride is as effective as chloroform and is more easily borne by children. Douching with this drug brings hidden worms out very quickly. If the worms have penetrated beneath the mucous membrane and are seen burrowing there, opening the membrane under cocaine and freeing the worms is advised, as this is the dangerous type of the trouble. When the worms are cleared out, an alkaline wash, with tampons of argyrol or neosilvol, will care for the ulceration present.

COMPLICATIONS

The most dangerous complication is meningitis caused by ulceration, the larvae burrowing under the membranes and lighting up microbic infection which passes up through the cribriform plate of the ethmoid bone. This may be a simple type and localize, or a septic type going on to death. The treatment is that of any meningitis. Necrosis of nasal bones may be primary and its extent enlarged by the trouble. If non-syphilitic, operation may become necessary, and if syphilitic, the condition clears up when appropriate treatment is given, usually.

PREVENTION

Screening against flies, or covering the face with netting thick enough to keep the nasal cavities from being attacked, is the best line of prevention. It seems as if something could be done to dispose of dead animals quickly after their demise. It has been my observation that animals dying on

the open range carry hundreds of thousands of these maggots, and no attempt is made to dispose of the carcasses. Even in the countryside, in the settled parts and in the smaller towns, I have often seen dead animals left to become fly-blown and allow thousands of flies to be hatched out. My experience is that 100 worms, or more, are average in the nose, so millions could come from the flies of maggots in one dead animal. Disposal of garbage, especially in country districts, could be taken care of better.

CASES

Of the sixteen cases seen, four, or twenty-five per cent, were in other locations than the nose, with no ear cases. This preponderance in the nose is the more dangerous when complications can be expected. One case was in a girl of seven, following a small scratch below the right ear. It was further opened and a plug of chloroformed cotton pressed against the opening and held there. Three days afterward, some worms came out. A cowboy was drunk a few days after being "hooked" in the buttock by a steer. The wound became exposed and was followed, in forty hours, with screw-worms. They were easily cleaned out and chloroform completed the work. A boy of four had a small laceration of the arm, treated with iodine. In a few days it was sore and, on being opened, showed infection with maggots. One could be seen crawling under the skin two inches from the wound. This gives an idea of what can happen in the nose. The other case was that of a carcinoma of the cheek and nose where the fly evidently placed the eggs outside of the nose. The worms were small when first seen and were easily destroyed. A peculiar thing about this series is that all of the nasal cases were in Mexicans while all of the others were in Americans.

The series follows:

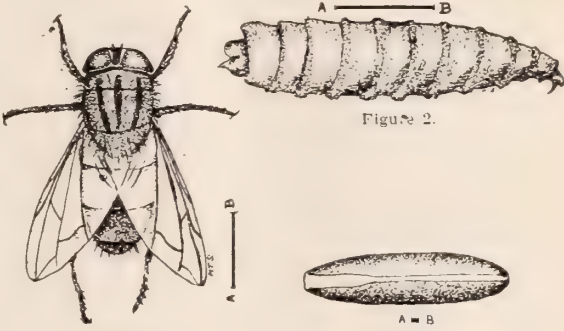
No.	Age	Sex	Nationality	Location	Blood picture	Result
1	9	M	Mexican	Nose	Not taken	Good
2	32	M	American	Buttock	Not taken	Good
3	10?	F	Mexican	Nose	Neg. Wass.	Good
4	25	M	Mexican	Nose	Pos. Wass.	Good
5	62	F	American	Ext. Nose	Not taken	Good
6	?	M	Mexican	Nose	Pos. Wass.	Good
7	4	M	American	Arm	Not taken	Good
8	?	F	Mexican	Nose	Not taken	Good
9	58	M	Mexican	Nose	Neg. Wass.	Good
10	12	M	Mexican	Nose	Not taken	Good
11	14	M	Mexican	Nose	Not taken	Good
12	46	F	Mexican	Nose	Pos. Wass.	Good (1)
13	7	F	American	Below ear	Not taken	Good
14	48	M	Mexican	Nose	Neg. Wass.	Good (2)
15	22	M	Mexican	Nose	Not taken	Good
16	54	M	Mexican	Nose	Neg. Wass.	Death (3)

Seven cases had blood Wassermanns taken; four were negative, showing that not all cases are of syphilitic taint.

(1) This case had a syphilitic nasal necrosis. The worms came out through the cheek, one inch from the ala on the left side. Antisyphilitic treatment took care of the bone necrosis. This was the third attack in three successive seasons.

(2) Nose looked as if he had broken saddle of hereditary syphilis. Negative Wassermann.

(3) Seen on the night of Sept. 3, 1926. Great pain, photophobia, and swelling of the nose on right side; tenderness over swollen area; nasal cavity negative to inspection. Had been sick only 24 hours. Temperature, 104.2; pulse, 90. Sept. 5th, he came to office and inspection showed a few maggots. Nine were taken out. At this time neck was slightly stiff. Temperature, 102.3 and pulse 110: (Would not go to hospital.) Sept. 6th, showed slight Kernig sign with neck stiffness, and was very restless. Three maggots came out in the night. I saw movement under the mucous membrane of nose high up on the septum. Opened it under cocaine and let out four maggots; could



(The above cut is copied from the paper of Drs. Yount and Sudler, which appeared in the Journal American Medical Association, Dec. 7, 1907. The drawings were made by Dr. Sudler from material furnished by Dr. Mark Francis of the Texas Agricultural Experiment Station).

Fig. 1. The adult screw-worm fly (*Comptosia macellaria*—Fab.), magnified 3.5 diameters. The line A B is the actual length of the fly.

Fig. 2. Larva of the screw-worm fly (*Comptosia macellaria*—Fab.), magnified 3.5 diameters. The line A B is the actual length of the maggot.

Fig. 3. Egg of the screw-worm fly (*Comptosia macellaria*—Fab.), magnified 30 diameters. The line A B is the actual length of the egg.

find no more. He had been given douches of chloroform in emulsion with oil, alternated with carbon tetrachloride, without avail. On Sept. 7th, showed signs of rapidly spreading meningitis; partially unconscious. Spinal tap showed very lit-

tle extra pressure of fluid although instrument was used. Fluid was clear, but not sent to laboratory. Restlessness hard to control with drugs. Sept. 8th

I was not allowed to repeat spinal tap. He was unconscious and very restless. Could not be held in bed. He died Sept. 9th. Autopsy was refused.

In 1905, Yount and Sudler collected 23 cases with four deaths. Ward collected 55 to 60 cases, 31 with definite records, and 22 fatalities. Other writers give 15 cases with 9 fatalities, and 31 cases with 21 fatalities. Most of the series with great mortality were from Mexico. Ward's first case, the first reported in Nebraska, was fatal. He claims that neglected cases nearly always die.

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DISCUSSION

DR. C. E. YOUNT, Prescott, Ariz. (opening): Dr. Stroud's paper is timely and instructive; timely because it has been twenty-one years since this subject has claimed our attention, and after twenty-one years we are entitled to work it over thoroughly. Dr. Stroud brings out some new facts which should be published, especially in relation to the meningitis feature. The paper is apropos, because, since our publication in 1907, many new physicians have moved into this section of the country. Certainly if one depends on text-book description of symptoms and treatment, he will almost certainly lose his first case, as did the man in Nebraska. Dr. Stroud very properly stresses three points: first, the early diagnosis upon which the treatment hinges; second, proper treatment, which is standardized in Arizona; third, the preventive measures suggested by him. Making a diagnosis is often a dirty job; the stench is revolting to nausea, but one should make a close observation, and the best way with the nasal cases is with the reflected light. A little chloroform will act as a "lachrymator" and put the worm on the run and you will be able to recognize him, and remove him with forceps.

In collecting data for our work, we collected twenty-three cases with four fatalities, two of them due directly to ravages of the worms. We published our results in the Journal of the A. M. A., in 1907.

In closing, I would like again to go over the life cycle of this fly, and try to get into the records, once more, the facts, as there has evidently been some discrepancy between the scientific facts and the lore of the range. We get much of our information in the southwest from the range.

"The fly is a small species less than half an inch (1 cm.) in length and of a bluish-green color with metallic reflections. It is particularly distinguished from related forms by the presence of three longitudinal black stripes on the thorax. The head is

reddish or yellow and the body is covered with stiff black hairs. The fly appears in early summer, the exact time depending on the latitude, after having passed the winter as an adult; either in a latitude free from extreme cold or in a protected location. In depositing its eggs it selects some decaying matter or wound and lays a mass of eggs at once; at least three or four hundred may be deposited by a single female in a space of a very few moments and the same fly may lay, at different times and in different places, hundreds and even thousands of eggs." (Osborn, Bull. 5, New Series, U. S. Department of Agriculture, Div. of Entomology).

"The eggs hatch within a few hours. If the eggs are laid in a moist place and on a warm day, they require less than one hour to hatch, according to Francis, or about nine hours according to Wood. The idea that they may be deposited in a living condition is refuted by all careful observations. . . .

"To recapitulate: This small fly is capable of laying hundreds of eggs. These eggs, in proper environment, hatch out into the screw-worm in less than twenty-four hours. This worm, or maggot, reaches maturity in about a week, during which time its ravages in animal tissue have been most persistent and destructive. At the end of this period, if unmolested, it instinctively wriggles away from the host to bury itself in the ground during transformation, this puparial stage occupying from nine to fourteen days, at the end of which time the mature fly emerges." (Yount & Sudler, Jour. A. M. A., Dec. 7, 1907, p. 1912).

This fly does not give birth to living larvae. However, there are, as have been mentioned, several other varieties which do deposit the living worm, so that there is a confusion. The chloroform treatment we have gotten from the cow puncher; it is the universal remedy of the cattle range and we have only added a few refinements.

May we call attention to the drawings in our original article, (see figure); they are quite accurate, having been made after careful measurements of specimens of the fly and larvae by Dr. Sudler.

DR. HILARY D. KETCHERSIDE, Yuma, Ariz.: During the late war, we had many of these cases in men at the front, and we noticed one peculiar thing: that was that we never had an instance of gas gangrene in a patient who was infected with worms, though there were many cases of gangrene in other men.

DR. JOHN J. McLOONE, Phoenix, Ariz.: It is very easy to realize how a screw-worm invasion can produce extensive destruction in the nose and sinuses. It is surprising that more of these cases do not prove fatal. The ethmoid region can practically be destroyed and the meninges can become involved through perforation of the cribriform plate.

Just a word more about treatment. I have used chloroform and a permanganate douche, followed by extraction with forceps. Although I have never tried it, it has occurred to me that the suction apparatus with the new suction nasal tip would be very effective in these cases.

DR. R. J. STROUD, Tempe (closing): The odor has been commented on; it is very characteristic, and if you have smelt a dead cow infested with maggots, that is the odor. Dr. Yount spoke of our information coming from the range. In the first case I had, if I had not had some range information, I would have known nothing about what to do. The patient came to the office and, in looking up his nose, I noticed the screw-worms moving around. Some of the boys at the mine also worked at ranches and they had been coming in and asking me for chloroform, which they told me they used to kill screw-worms. Remembering this, I put this boy under chloroform

anesthesia and took out the worms, and also squirted chloroform in the nose. If the cowboys had not told me, I would not have known anything about it, as there was no information in the literature. The dearth of literature in standard textbooks is startling.

There is a disputed point as to whether these particular flies deposit eggs or worms. My information from Nelson, and in the literature, would lead me to believe that larvae are deposited. Dr. Yount has gone into the matter very scientifically, as he and Dr. Sudler did in 1907, and has quoted from their original article, about the life cycle of the fly, and he is convinced that eggs are deposited. In the case of the woman with the carcinoma of the cheek and nose, I was there within half an hour of the time she was supposed to have been blown by this fly. The fly had been there only a matter of minutes, and I found this area infested with worms, which, the man of the house told me, had shown noticeable increase in size since he first saw them.

BLOOD TRANSFUSION

FRANK J. MILLOY, M. D.

Phoenix, Arizona

(Read before the Thirty-sixth Annual Meeting of the Arizona State Medical Association, at Yuma, Arizona, April 21 to 23, 1927).

The purpose of this paper is to describe a method for blood transfusion which was devised by one of my associates, which has been used by us for the past three years, and which, as far as we know, is original with us. The apparatus used consists of five 100 c. c. Leur's syringes; a 50 c. c. ampule of Parke-Davis 2.5 per cent sodium citrate, and the regular blood transfusion needles. The technic is as follows: 10 c. c. of sodium citrate is drawn into each 100 c. c. syringe, the donor is placed on the table, arm sterilized, tourniquet applied just tight enough to constrict venous circulation, but not to interfere with arterial circulation. As a rule the donor has fairly large veins, so the large-sized needles are used in drawing the blood. Then, as the operator fills each syringe, he passes it to his assistant who shakes the syringe thoroughly to mix the citrate and blood. This procedure seldom requires longer than five minutes. The recipient's arm is then prepared, tourniquet applied, and a needle inserted in a vein. The recipient's veins generally are not as large and prominent as the donor's, so that, sometimes, it is necessary to use a smaller gauge needle. The only difference is that if a smaller needle is necessary, it takes a little longer to force the blood through it. As soon as the needle is placed in the vein, one syringe after another is attached to it. First a small amount of blood is withdrawn, so that the air in the needle is brought back into the syringe, then the blood is forced into the vein as quickly as the needle will allow it to flow. If the regular sized transfusion needle is used, the five syringes can be discharged into the

vein in from three to five minutes, so that the entire procedure, allowing for the change from the donor to the recipient, may not require more than fifteen minutes. And the operator requires the help of only one assistant, who needs no training but just a few instructions.

The advantages of this method are: (1) the rapidity with which a transfusion may be performed; (2) the minimum length of time the blood is outside the human body; (3) the minimum destruction of red blood cells, by preventing the blood from coming in contact with the air, and the elimination of the stirring rods to mix it with the citrate; (4) the marked immediate effect upon the patient of forcing the 500 c. c. of blood into the circulation so rapidly as compared with the older gravity method, in which the blood runs so slowly; (5) the remarkably few reactions following the transfusion; (6) if the donor should suddenly go bad his own blood may be quickly injected back into his veins.

During the past three years we have performed sixty transfusions in twenty-five patients. Seven of these cases were patients with pernicious anemia, and the remainder were pre-operative and post-operative cases or secondary anemia patients suffering from extensive hemorrhage or sepsis. One case with pernicious anemia received eleven transfusions and had only one slight reaction, after the ninth. Two other pernicious anemia cases, who had eight and ten transfusions respectively, had moderate reactions after the last two or three transfusions. The remaining twenty-two patients had no reactions whatever except marked improvement. One other pernicious anemia patient who had had ten transfusions by other methods, both direct and indirect, and who, after the last four or five, had terrific reactions lasting from twenty-four to seventy-two hours, consisting of severe chills, fever, urticaria, and asthma, was given four transfusions by this method with absolutely not a sign of a reaction.

We have not been performing so many transfusions during the past year on account of the brilliant results obtained in pernicious anemia patients with the Murphy-Minot diet. Our most gratifying results with transfusions have been obtained in pre-operative and post-operative cases. The procedure can be carried out so quickly that if a patient's condition is not good, or if much shock is present, a donor can be kept on hand and a transfusion given immediately following the operation.

Many cases present very poor risks for

surgery and transfusions could practically restore them to normal risks, or give the patient whose condition was apparently hopeless, a fighting chance with the aid of surgery.

Transfusion has a very decided effect upon sepsis or toxemia. Our most recent example was a case of exophthalmic goiter who had postponed operation repeatedly, because she made several temporary recoveries with iodine. Finally this failed to help her and she became desperate. She was in complete collapse for 48 hours with heart rate of over 200 and respirations of 48, which were Cheyne-Stokes at times. Two hundred cubic centimeters of blood one day and 400 cubic centimeters the next day restored her so that she is well on the way to preparation for operation.

There are many cases of chronic invalidism where blood transfusion would give just enough of a boost so that they would be quickly restored to their place alongside of their fellowmen. Or cases of secondary anemia resulting from some prolonged sickness may each gain more from one transfusion than from several months of iron therapy and ordinary restorative procedures.

Blood transfusion is directly indicated in all cases of hemorrhage even of the mucous membranes. At first thought it would seem a contraindication here because it raises the blood pressure, but fresh blood is the best hemostatic. Citrate blood shortens the coagulation time temporarily, and unmodified blood permanently.

Reviewing the literature on blood transfusion at the present time, we find that the majority of evidence is in favor of unmodified blood as compared to the citrate method, mainly because it is followed by fewer reactions. It is equally agreed, however, that the cause of the reactions with the citrate method is not because sodium citrate is a toxic substance. In fact it has been demonstrated numerous times that this drug is practically non-toxic. The chilling of the blood during the transfer from donor to recipient is more frequently the cause of reactions than any other factor, according to Lewisohn. Citrate does destroy many of the platelets, according to some investigators. So, if we wish to transfuse patients with hemophilia or purpura hemorrhagica, the whole blood should be used, as the platelets are most essential in reducing the coagulation time. We have not had occasion to transfuse such a case.

Better results could be obtained in transfusion work if more careful attention were

paid to the technic of grouping. In all our cases we have not only grouped all our recipients and donors, but we have typed them against each other. On more than one occasion we have found individuals in the same group, whose blood was incompatible when tested against each other. The use of group 4 as a universal donor, probably should be condemned. This would probably eliminate many more of the reactions reported in the literature as following the citrate method.

If blood transfusion can be easily and quickly done, it has a very much larger field than it is used for at the present. There are many forms of apparatus recommended for use for the direct method. It is quite evident, then, that the ideal apparatus has not been invented and all the present ones in use have disadvantages and often are accompanied by failures. We have never yet failed to complete a transfusion. Any one who can give any form of intravenous therapy, should be able to give a transfusion by the method we have described. And we have never found it necessary to cut down upon a vein.

CONCLUSION

While we agree that the unmodified blood no doubt has a distinct advantage over the citrate method, nevertheless we have had almost equally good results with the technic we have described, mainly because we have eliminated two of the greatest factors in the production of post-transfusion reactions by preventing the chilling of the blood during the transfer, and by the more careful attention to direct typing of donor against recipient. The most frequent indications for transfusion are in pre-operative and post-operative patients and cases of secondary anemia due to hemorrhage or sepsis, or both, who require only one or two transfusions, and, therefore, are benefited just as much by one form of blood as another.

We have performed sixty transfusions in twenty-five patients with slight reactions in only three cases of pernicious anemia and only after they had eight transfusions or more. One case of pernicious anemia who had had ten transfusions by other methods, both direct and indirect, followed by very severe reactions in the last four or five times, we transfused four times, and we had a marked improvement following each occasion, without the slightest sign of a reaction. Transfusion should be used more frequently as an early therapeutic measure and not be resorted to as a last desperate chance to save the patient's life.

DISCUSSION

DR. A. C. CARLSON, Jerome, Ariz. (opening): The citrate method described seems to be a combination of the Lindemann and Lewisohn methods; in other words, a multiple syringe plus sodium citrate. Regardless of the method, whether modified or unmodified is used, the important thing in any transfusion is matching blood, having the donor and recipient in the same group and cross-typing the blood. As for this particular modified method, Dr. Milloy points out that one of the advantages is to prevent chilling of the blood. You will certainly have less chilling in the unmodified method, and it seems to me that, in any institution with a well trained team available, there should be no trouble with the Lindemann, Unger or other methods. We first started out with the Lindemann method of multiple syringes and did have trouble, but found that it was due to having too few syringes. Later we established a procedure with the Unger method and a well trained team and have had no trouble.

As to the advantages claimed for this citrate method: (1) Rapidity of preparation. This is true in certain cases where you are anticipating possibility of transfusion, but where it is done as an emergency and you still have to go through the typing and grouping of recipient and donor, and preparing recipient and donor, you could have your apparatus prepared and use the unmodified method as readily. (2) Minimum length of time. We must agree that the citrate method is quicker than the unmodified method. (3) Minimum destruction of blood cells by preventing contact with air. Dr. Milloy mentioned that, after withdrawing 100 c.c. of blood from the donor, the syringe is handed to an assistant who mixes by shaking. I wish to ask whether it is possible to mix the blood and citrate by shaking without having air in the syringe? The only mixing without having air in the syringe would be by osmosis or gravity. It seems there must be air in order to secure mixing. (4) Marked immediate effect upon the recipient by forcing so much blood rapidly into the vein, as compared with unmodified method. This may be all right in certain acute cases where forcing blood into the recipient will do no harm, but there are cases in which it may do harm. He states that they give 500 c.c. of blood in from 3 to 5 minutes. This surely seems rapid; placing that amount of blood in the recipient's circulation in from 3 to 5 minutes is apt to cause pressure on the right heart and collapse. (5) Possibility of donor going bad. That is a possibility, but we try to select young robust adults and if we see any signs of paleness or dyspnea, other methods of stimulation could be resorted to and the withdrawal of blood stopped.

Another point mentioned was that patients came with reports of reactions from previous transfusions, but did not mention the technic of transfusion used when such reaction occurred. Granted that the unmodified method was used, is it not possible that care was not taken in the proper matching of blood? When the blood is properly matched, the likelihood of reaction is reduced to a minimum, regardless of the procedure.

DR. J. I. BUTLER, Tucson, Ariz.: It is not so much a question of technic as it is how you handle the particular method you use, team work, etc. The point that Dr. Milloy mentioned but did not emphasize, is that transfusion should be used far more frequently than it is. It is a method of every-day practice and not to be used as a last resort.

DR. R. D. KENNEDY, Globe, Ariz.: Last year I visited one of the eastern clinics where many transfusions are done. In speaking of reactions, they told me that, up to a certain period, they had quite a number, but that during the past year they had adopted the practice of re-grouping all donors on

the day of the transfusion, and found that the group of many donors would change. Since adopting the checking of the group of donors, they have had no more reactions.

DR. FRANK J. MILLOY (closing): I wish to thank the doctors, especially Dr. Carlson, for their discussion. It probably makes no difference which method is used; like everything else, the method you are most familiar with is the one with which you will succeed the best. The point we wish to make, however, is the simplicity and ease with which a blood transfusion can be given by the method I have just described. Everyone has seen blood-transfusion result in failure with both the old gravity method and the more recent direct method of transfusion, even in the greater clinics. So far, this procedure has never resulted in failure with us.

I cannot answer the question about the necessity for air in the syringe in order to secure thorough mixing; we get very little air, if any, in the syringe while it is filling, and we have never had coagulation occur as a result of insufficient mixing. We have never had a donor get bad enough to necessitate the reintroduction of his own blood, but have always felt that, if it should occur, we would be ready with the best possible means of resuscitation.

GRANULOMA FUNGOIDES

A. A. SHELLEY, M. D.
Phoenix, Arizona

Read before the Thirty-sixth Annual Meeting of the Arizona State Medical Association, held at Yuma, April 21 to 23, 1927.

Some of the synonyms are: mycosis fungoides, granuloma sarcomatodes, fibroma fungoides, sarcomatosis generalis.

Stelwagon says it is a chronic, malignant disease characterized by precursory symptoms of months' or years' duration, of an eczematous, urticarial or erysipelatous aspect, with the subsequent appearance of pinkish or reddish tubercular or nodular, lobulated tumors or flat infiltrations, which frequently ulcerate and form fungoid or mushroom-like growths. The malady was first described by Alibert in 1814. Duhring reported the first case in America.

SYMPTOMS

Sutton says that, in the majority of instances, the course of the disease is marked by four fairly well defined stages: (1) the stage of dermatitis; (2) infiltration; (3) tumor formation; and (4) ulceration.

In the first stage the manifestations may assume the most variable forms. As Besnier has said, "In the presence of a chronic, ambiguous, pruritic dermatitis, rebellious to the ordinary treatment and which assumes the form of a vague erythrodermia, of a psoriasis, or an eczema, of a rebellious urticaria, of a lichenoid prurigo, etc., it is necessary to bear in mind the question of a possible mycosis fungoides." As a rule, however, the predominating type of eruption is erythematous or eczematoid in character. This preliminary stage may be brief, or even entirely lacking, the growths developing on apparently normal skin, but

usually it is present and may last for months or years before signs of infiltration become apparent. The lesions of the first stage are usually circinate in outline, and may be either dry or moist. In color they vary from a pinkish or reddish to a purplish or brownish hue. Itching may be absent, but is usually present. These earlier manifestations are as capricious in their course as they are variable in aspect. The eruption may disappear spontaneously at any time, only to recur at the same site or in some other locality in the course of a few days or weeks.

In the second stage, circumscribed areas of infiltration appear. The lesions vary in size from that of a pea to that of the palm, and may be commingled with the erythematous and eczematoïd plaques of the first stage. These, too, are oval or circinate in outline, but, as a result of involution and of coalescence, crescentic and gyrate lesions may be formed. Ulceration sometimes occurs at this stage.

The period of tumor formation gradually follows that of infiltration. The growths are round or oval, pea to orange size or larger, whitish, pinkish, or purplish, solid, smooth or crusted tumors. In number they vary from a few to twenty or more. No region is exempt. The course of the tumors varies. They may disappear spontaneously, and new ones spring up on diseased or apparently normal areas at any time.

Sutton says the lesions are usually tender and painful, and itching is not a prominent feature of this stage. Ulceration generally begins at the apices of the larger growths, and usually only a portion of the tumor is destroyed. The resulting lesion is a mushroom-like ulcerating mass, the raw surface of which is covered with a sanguineous, purulent exudate. Lymph node involvement may be present, but is not a typical or characteristic feature of the malady.

ETIOLOGY

The majority of the reported cases have occurred in adult males. Trauma has apparently been a factor in one instance. Sutton says that the disorder is probably microbic in origin, although careful and exhaustive investigation by competent observers has thus far failed to unearth the causative organism. Strobel and Hazen conclude that mycosis fungoides belongs to a group of myeloid and lymphoid conditions, which are closely interrelated, and that these diseases probably have a common exciting cause, possibly a microorgan-

ism, and in this way may be related to the infectious granulomata. It occurs only in adults from about 30 years (at least there is no reported case under 20) to old age.

No two cases have ever occurred in the same family, and nurses and attendants have never become affected. Inoculation of guinea pigs and rabbits, by Stelwagon and others, was without result. There is no characteristic blood picture, though there is often moderate secondary anemia, varying leukocytosis, and increase in mononuclears.

PATHOLOGY

Stelwagon says there seems no longer doubt that granuloma fungoides can scarcely be considered as belonging or allied to true sarcomata, as Kaposi, Funk and others believe; although there are, as Bowen points out, many points of similarity, both histologically and clinically, with multiple sarcomatosis of the pure type. The fact that some of the growths may undergo involution is, according to the dictum of Cohnheim, a proof of their non-sarcomatous nature, but we know now that in some instances of sarcoma, especially the multiple pigmented sarcoma of Kaposi, such retrogressive changes can also take place. In the early stages, Galloway and Macleod found connective-tissue cell proliferation around the blood vessels of the papillary layer, the hair follicles, sebaceous glands, coil ducts and occasionally around the coil glands. The cells presented distinct types: large, oval, fusiform or rounded connective-tissue cells containing granular protoplasm, a large nucleus whose chromatin network and nuclear membranes were darkly stained, while the nucleoplasm was more densely stained than the cellular protoplasm, unless the cells were undergoing mitosis, when the figures appeared deeply colored. Then there were small round cells of slightly variable shape, somewhat larger than leukocytes, with nuclei similar to, though proportionately smaller than those of the large cells; mast cells of varying size; a few plasma cells; and an occasional giant cell. In the tumor and breaking-down stage the cell proliferation was increased and the cells showed a marked tendency to break down. The granuloma encroaching on the down-growing epithelium, flattened it out and eventually spread up to the surface and was covered only by a thin layer of corneum. There doesn't seem to be anything specifically diagnostic in the histological pathology.

DIAGNOSIS

In the early stage it is to be distinguished from the commoner diseases which it mim-

ies. such as eczema, psoriasis, etc.; but I believe diagnosis is impossible before the stage of tumor formation. The erratic course of the lesions, and their resistance to ordinary treatment should serve to arouse suspicion.

PROGNOSIS

Stelwagon says: "The disease goes on to fatal termination, the duration, as already stated, varying somewhat widely from some months to fifteen years; after the active tumor stage is entered, the patient can scarcely live more than some months, or one or two years at the most, depending principally upon the numbers of the growths and the degree of ulcerative tendency displayed." Sutton says: "In a few instances recovery has ensued, but the majority of the cases terminate fatally in from one to ten years."

CASE REPORT

Miss S., aged 39, school teacher; resident of Arizona since 1908; graduate of Tempe Normal; blonde; has always had good health until present illness. Skin is clear, she is well nourished, has good physique, and is always full of life and energy.

Family History: Her father died, when she was about eight years of age, as the result of accidental injury. Her mother is living, but is in poor health. When the mother was about 14 or 15 years of age she had enlargement of the thyroid gland (goitre). She was treated by a doctor in Illinois and the enlargement disappeared. About 15 years later she developed myxedema, and before a diagnosis was made she was a mental and physical wreck. Although she has taken thyroid extract constantly, she is still a semi-invalid. There is one brother who is in fair physical condition, aged 33.

In the summer of 1922 the patient developed what seemed to be a few small areas of eczema on the arms, on which ordinary treatment had no effect. By autumn of the same year there were some scattered spots on the thighs; all lesions were confined to the flexor surfaces. The lesions had very little color, but were rough, rather dry and inclined to scales. In the spring of 1923 she had a moderately severe case of influenza. The skin eruptions spread some, but not below the elbows or knees and still on flexor surfaces. During the summer of 1924 she attended a teachers' summer school at Flagstaff for some weeks, and when she returned the eruption had practically disappeared. In February, 1925, she noticed there was no wax in the ears, but instead a cheesy substance. In March of the same year she had a second attack of influenza; following this, the eruption spread over all the body except the legs. There was some enlargement of the axillary and inguinal glands. The eruption appeared more inflammatory, and the skin became infiltrated at site of eruption. A month or two prior to this, a blood Wassermann reaction was negative, and the urine tested normal. Tonsils were checked and found normal. Teeth all O. K. Heart, lungs and digestive organs negative. General condition good, and patient teaching. Blood examination revealed nothing except a slightly diminished number of red cells.

About this time I referred the case to Doctor Clohessy. He said, at the time, he thought it was

eczema of the erythematous type. He treated her with various applications and constitutional medication until he went away on vacation in May or June. The treatment had no effect except that it gave some comfort in the way of relieving the itching, which was a prominent symptom from the beginning.

The eruption kept spreading. In the early spring of 1925, her ears became red and swollen to the extent that the ear canal was almost closed and the entire external ear involved. With it there was a high temperature. On the entire surface of the ear there was a profuse exudate of a yellowish watery fluid which yielded a pure culture of staphylococci. This condition lasted only 10 or 12 hours, but the same condition recurred every few weeks. By this time the eruption had spread all over the body, including the scalp, palms and soles. There was not a quarter inch square of healthy skin on her body. The hair became gray, lost all semblance of life and fell out. Scalp was one mass of scales, and the entire body desquamated profusely. She said there would be a half-cup or more of scales on the sheet every morning. By July, the character of the eruption had changed very much. There were lesions ranging from the size of a grain of wheat to an inch or more in diameter. Some would be designated as papules and others as tubercles or nodules. Possibly the most of them were the size of a coffee-bean, and the shape was round or oval. These nodules were solid masses, pink in color, not painful at any time and when pressure was made upon them they exuded a sero-pustular fluid of a pearly color, which, on culture, yielded staphylococci. The larger of these would become ulcerated on the surface and the edges of the ulcer were an infiltrated ring simulating the appearance of a chancre. This is the mushroom-like growth of which writers speak. The surface of the ulcers was depressed, granular in appearance, with a yellowish color and rather dry. That is, there was very little exudate. There were only a few of these ulcers, and none of the smaller lesions went to ulceration. One or two ulcers healed with a scar in the course of two or three months. About November, 1925, she began having styes every now and then, and also abscesses. The abscesses came one at a time at intervals of weeks. They appeared on the dorsum of the foot, on the thigh and back of the neck, in the axilla and on the breasts, and, when opened and drained of about 2 to 4 drachms of pus, they healed readily. Her feet and legs were edematous, and she was losing weight rapidly.

With all these lesions she was teaching school and kept going until the end of the school term, 1926.

When Dr. Clohessy returned, in the fall of 1925, I gave him a brief description of the changes that had taken place in his absence, and, without seeing the patient, he at once made the diagnosis of mycosis fungoides. He also gave me the cheerful information that the disease is always fatal. We then began giving the prescribed treatment of arsenic. We also gave a wide variety of treatment, as colloidal gold, autogenous vaccine, endocrines, quartz lamp, and other light therapy, and all to no effect.

At the end of the school term, in 1926, the patient was very sick. She spent most of her time in bed; her pep and vitality were at a low ebb. In the meantime, I learned that Hertzler had had 11 cases, all of which terminated in death, except one, which was apparently cured by x-ray. He explained, however, that the lesion in this case was confined to an area on the back, the size of

two hands. A little later I learned that Dr. Denney of the Kansas University School of Medicine, was then treating a case of granuloma fungoides, of a very extensive lesion, with x-ray, and that the result, up to that time, was very encouraging. With this meagre information, I asked Dr. Watkins to give our patient x-ray treatment. On this treatment she began to improve at once. By the time her school started last fall she was able to teach, and, in fact, seemed to have regained much of her former vigor.

After x-ray treatment was started, the hair all came out and the lesions healed with a white, smooth scar, except that the ulcerated lesions healed with a depressed scar. At the present time she has only a few lesions that are not entirely healed, and they are improving.

The patient seems as healthy as ever. Her hair has returned in a heavy growth of iron gray, that looks perfectly healthy. One item that may have some bearing on the prognosis of this case is the fact that one of the ulcerative lesions that had been healed for some months began to break down again. However, a treatment by x-ray promptly healed it. The question is, will the x-ray cure be permanent? In my mind I am convinced that she would not have lived long without x-ray interference.

I wish to add that I am much indebted to Dr. Clohessy for the diagnosis.

I also wish to express my appreciation to Dr. Watkins for the treatment. To me it seems a wonderful piece of work; for in this case he had to "blaze the way"—there being no prescribed technic to follow. When you learn that he covered the entire body about three times, without a burn and apparently without any injury to the blood, you will agree with me that he has at least established a precedent.

DISCUSSION

DR. W. WARNER WATKINS, Phoenix, Ariz. (opening): We had seen this patient several times before the final diagnosis was made and x-ray treatment begun. When it appeared to be an eczema, we did not advise x-ray treatment and suggested ultraviolet radiation instead. This was given by another Phoenix physician, but without material effect. The extent of her involvement may be judged by the fact that, when we were asked to make food sensitization tests, we were unable to find a single square inch of skin anywhere on her body which was normal enough to place a test on.

When the final diagnosis was made by Dr. Clohessy, and we not very hopefully agreed to administer x-ray treatment, she was in a pitiable shape. Our treatment consisted in marking off the entire skin surface, from crown of head to tips of the toes and covering two or three areas at each treatment, the treatments being given once a week, as this was a convenient interval for the patient. It required forty-five areas to cover the body surface. The amount of radiation was about seventy per cent of a minimal skin dose, just enough to produce a reaction in the deeper skin layers. The factors used were 75 k. v., 5 ma., 12 inch dist, 10 minutes, with $\frac{1}{2}$ mm. aluminum filter. Recession would invariably begin within a few days and superficial lesions would have disappeared within two weeks, the nodular areas and ulcers requiring longer to heal. Many of these more advanced lesions would require additional radiation before healing would take place. The

entire surface of the body was covered systematically three times. The dose over the head was an epilation dose, the hair falling out about three weeks after treatment.

Since complete recession of all lesions took place, there has been evidence of recurrence several times. When this happens, the individual lesions which appear have promptly disappeared again under treatment.

According to the best information obtainable on this condition, the improvement in this patient, which amounts to an apparent cure, will not be permanent. The disease responds, as do the lymphomas, leukemia or Hodgkin's disease, by a very astonishing improvement. After a period of time, varying with the individual, there are recurrences which may yield to radiation, but will do so with increasing reluctance until, finally, a stage is reached when radiation has no further effect.

However, for the time being this patient has been pulled back from the grave and, whatever the final outcome may be, all parties interested are well pleased with the present status.

DR. T. T. CLOHESSY, Phoenix, Ariz.: Just a few remarks regarding the pathology and treatment of granuloma fungoides. This disease manifests itself essentially as an increased genesis of lymphoid cells and their deposition in pathological quantities, more especially in the skin. In some cases necropsy has shown such collections in some of the internal organs. These collections of lymphoid cells are found in varying quantities in the different stages of the disease; in the erythematous and eczematoid stages, merely as scattered infiltrations; the fungoid stage, as small or large circumscribed accumulations. Except for the subjective sensation of itching, the general health is apparently not impaired until the consecutive ulcerative stage arises. There is little or no provision made for a vascular supply to these fungoid masses which, by their pressure and otherwise, interfere with the nutrition of the overlying skin, and there result necrosis, pyogenic infection and ulceration, with consequent general sepsis and death. What causes this abnormal development and these localized collections of round cells, we do not know.

As to the action of the x-ray on these lesions, we know that raying the bones will produce a temporary leukopenia. We know that raying the tonsils will produce a temporary destruction or dispersal of the lymphoid cells therein contained. So with the action of the x-ray in this condition. It is a wonderful help and the only help at this stage; its effect is truly spectacular, but experience since 1912 goes to show that, unfortunately, the result is but temporary. The lymphoid cell collections temporarily disappear, but the x-ray does not remove the cause of their development and I fear there will be a return of the lesions in this case, as has been the case with those reported to date.

DR. ORVILLE H. BROWN, Phoenix, Ariz.: Dr. Watkins' reference to the suspicion of food sensitization in this case reminded me of two cases I had some years ago. I did not see this patient and do not know whether there is any similarity, except the itching and thickness of the skin. In both my cases almost the entire body was covered, with almost intolerable itching. In one case there was almost normal skin in one groin and a number of sensitization tests were made in that area; two or three foods were found to which he did not react and by putting him on these foods and nothing else, in a week or two he was well. In the other case there was no normal skin to put the test on and I selected a diet of foods that

he had not been eating, hoping to get something to which he was not sensitive, and sent him away; after a month or six weeks, he was better, with some normal skin, so I made a number of food tests, and by putting him on foods to which he did not react, it was only a matter of a short time until he was cured. I do not know that these experiences have any bearing on this case of Dr. Shelley's; one of these was a baker and his primary sensitization was wheat; the other was a woman living in the hills and she was very fond of peaches and ate a great many of them, and that was her primary sensitization.

DR. J. I. BUTLER, Tucson, Ariz.: Has there been a white blood count recently? (Answer: Not recently.) The description is so similar to the extensive skin lesions of lymphatic leukemia that I wondered about it.

DR. SHELLEY (closing): She has been on diet but has never had tests made for food allergy. Dr. Watkins has said she has had one or two evidences of recurrence. The last time I saw her, the day before I came away, she had another typical lesion on the back of the shoulder. The description of the disease, which can be found in the literature, is quite typical. The treatment has been considered hopeless up until a short time ago. The literature does not give us anything on treatment of a curative nature, until the x-ray was instituted.

FOREIGN BODIES IN AIR AND FOOD PASSAGES.

H. T. BAILEY, M. D.
Phoenix, Arizona

(Read before the Maricopa County Medical Society, April 4, 1927).

A few months ago a doctor sent me a patient who said he had a pledget of cotton lodged in the right side of his larynx. He knew it was there because he could feel it. The truth was the doctor had been treating this patient with cotton wound on an applicator. While he was applying some medicine to the nose with this applicator, the cotton came loose and was lodged beneath the inferior turbinate, on the left, when the patient declared it was lodged on the right side of the larynx.

About three years ago a Mexican girl, six years old, was sent to me with a sero-sanguinous discharge from her nose. The child had some fever, was apathetic, lost sleep and appetite, and showed that she was very sick. This patient had been treated by one doctor for "flu," and by another for gastro-intestinal disturbance because she vomited and had tympanitis. I found, and removed from her nose, 123 screw worms.

About twelve years ago I had a white boy, aged six, with fever, tympanitis, and delirium, with complete unconsciousness. It looked very much like meningitis. I removed from this boy's nose 293 screw worms.

A colored woman came in and said, "I have a pin in my throat." She had no pain

except at one point, to the right and above the "Adam's apple." I found the pin just above the larynx with the point to the right and the head to the left. Removed it without difficulty.

FOREIGN BODIES IN THE LARYNX

Many times the foreign body passes through the larynx without causing any irritation, therefore there are no laryngeal symptoms. In this case it may be arrested at the lower air passages and cause instant death.

The cough is severe at first, subsides for a short time but may persist and become croupy. At other times the patient may have paroxysms of coughing that resemble whooping-cough. Therefore, such a patient may be treated for diphtheria or whooping-cough.

When a child gets something in its throat a parent or some neighbor at once puts a finger down the child's throat to remove it. Often they move it instead of removing it and then it passes into the larynx, trachea or esophagus. Others catch the child by the heels with the head down and shake the child or pound it on the back. In this case, if the foreign body is in the trachea and it passes out and lodges in the chink of the glottis, the child will suffocate.

Recurrences of laryngeal paroxysms suggest the lodgement of a movable body in the larynx.

Subjective sensations of foreign bodies in the larynx during the first two or three days: There may be sharp pains in the Adam's apple or in one or both ears. If the arytenoids are inflamed, there will be pain on swallowing. Phonation will likely be seriously impaired; the sputum, blood streaked. Dyspnea varies with the size of the intruder and the amount of inflammation it causes. Tooth-brush bristles, fish-bones, etc., may pass beneath the mucous membrane and cause a perichondritis and a destruction of the larynx.

Hoarseness in angioneurotic edema involving the larynx, may simulate a foreign body in the larynx.

FOREIGN BODIES IN THE TRACHEA AND BRONCHI.

Usually we have the history of laryngeal spasm which subsides but leaves the patient with a wheezing respiration and a cough. The cough is a most distressing symptom, coming in paroxysms which may be so severe as to produce vomiting. Cyanosis and dyspnea often accompany the cough, and one may hear a flapping sound in the trachea.

If the foreign body be not removed, increasing dyspnea occurs, produced by the

swelling of the subglottic tissues and tracheo-bronchial mucosa from the trauma. Sudden asphyxia is always a danger, for a powerful bechic action may jam the foreign body into the glottis chink.

This paroxysmal cough may cease for a while then recur, as shown in the case of the child with the pin in the bronchus of middle right lobe and published by me in the *Southwestern Medical Journal* in February, 1927, or in the case of the child with the hollow bead in the right lung, published in the *Chicago Eye, Ear, Nose and Throat Monthly*, July, 1924.

Inspection—If the foreign body has been present for some time the affected side of the chest may be smaller than the other side. This is not always true, for in some cases the affected side is much larger on account of an emphysema developing below the foreign body. This is seen often after the inhalation of peanut kernels or a grain of corn.

Expansion is more or less limited in the side in which the foreign body is lodged.

Palpation. Where there exists but partial obstruction in a large bronchus, fremitus can be felt best posteriorly over the foreign body. In case of a "drowned lung," it will be felt on the unaffected side. Percussion early gives a more or less tympanitic note because of the valve-like obstruction which holds the air in the lung, but later, as secretions accumulate, the percussion increases in dullness until, over the area of the "drowned lung" it is flat.

Auscultation. By placing the ear or the stethoscope over the mouth of the patient, one will get an asthmatoïd wheeze on forced expiration after the lungs have been cleared as much as possible of mucus. At a distance from the obstruction, respiratory murmur is diminished and, if there is complete obstruction, there will be an absence of breath sounds. Rales, loud, snoring, cracking and snapping sounds are often heard in a distant part of the affected lung or in the opposite lung. These sounds are most often heard in the case of a peanut in a bronchus, and were observed in the child with pin in right middle lobe. If the air can pass the obstruction the rales will be heard posteriorly and over the foreign body.

One may not have the above history or symptoms, or the patient may have inhaled the foreign body when a child and now have pus sputum, hemorrhages, cough, night sweats, emaciation, club fingers and all the other symptoms of tuberculosis. All such cases should have an x-ray of the chest,

especially when no tubercle bacilli are found in the sputum. The literature gives accounts of many patients treated in sanatoria for months, who were afterwards found to have foreign bodies and abscesses in the lungs.

The differential diagnosis between tracheal and esophageal foreign bodies is, seemingly, at times a point of difficulty. Here a lateral x-ray will be of value as well as an anteroposterior. In a good lateral x-ray plate the trachea can be seen plainly. Furthermore, the disk-shaped foreign body seen to be lying in the sagittal plane must be in the trachea, for it must have entered through the anteroposterior chink of the glottis and can remain in this position only because the trachea is an open tube with a yielding posterior membranous wall.

On the other hand, a disk, to enter the esophagus, must pass flatwise behind the larynx and enter the anteroposteriorly collapsed cervical esophagus in the same position, therefore, it will be seen in the lateral plane of the body, and usually just behind or on a level with the suprasternal notch.

FOREIGN BODIES IN THE PHARYNX

Fish-bones are perhaps the most frequent and usually lodge in the crypts of the faucial or lingual tonsils.

In December, 1926, Dr. Felch sent me a lady who, while eating noodle and beef soup, lodged a piece of beef bone in her throat. I removed this bone from right sinus periformis.

In January, 1927, Dr. Goodrich sent me a lady who, while eating the same kind of a dish, had a bone lodged in her throat. I removed a piece of beef bone about one-half by three-fourths inch from right sinus periformis.

Mrs. M., while eating had something lodge in her throat that felt like a needle. The pain was so severe that a physician was called. He gave a hypodermic. Next morning I found a pin with head presenting and the point had pierced upper posterior border of larynx. The head showed to right of epiglottis. I removed it.

Swelling increases the discomfort in these cases and the patient refrains from eating or drinking. Large foreign bodies, as a tooth plate, may lodge in the pharynx and cause suffocation, thus all cases of coma when first seen should be examined for foreign body in the pharynx. A foreign body may be coughed from the lower air passages and lodged in the naso-pharynx and overlooked for some time unless this possibility is considered. If the object be lodged near the larynx, violent coughing may result. If the object be a fish-bone it may take very close scrutiny to find it. Blind efforts at removing are not justifiable. The cornu of the hyoid bone has been denuded and partially removed.

FOREIGN BODIES IN THE ESOPHAGUS

Dysphagia is the most prominent symp-

tom of esophageal foreign bodies. Complete obstruction may be seen when a bolus of meat is lodged in the esophagus. I saw Dr. Robert Lynch remove one which completely obstructed the esophagus. In these cases patients have excessive salivation.

Dyspnea is a troublesome symptom when the foreign body is large and produces pressure on the larynx or if a pharyngeal foreign body overhangs the larynx. Cough is an important symptom in some cases and may be due to an overflow of secretions into the larynx, or when perforations, traumatism or ulceration of the wall, allows leakage of secretions or food into the trachea.

Hematemesis and hemoptysis are not uncommon and, if the foreign body penetrates a large blood vessel, a fatal hemorrhage may result.

Wry Neck. A patient was sent to Borzell for suspected disease of the shoulder joint. He found a coin in the esophagus.

Fever is often present in children. Jackson reports fever of 106 degrees, and a very toxic condition, in a patient who had an open safety-pin in the esophagus. Always x-ray a doubtful case and then a negative finding does not always prove that no foreign body is present.

On March 12, 1927, I had a child one and one-half years old who came in from out of town with a lead slug in its esophagus. The child, while playing on the floor, got hold of a lead slug and put it into its mouth. The mother, seeing this, became excited, picked the child up and shook it, then ran her finger down its throat and, of course, instead of removing it, pushed the foreign body further down. The child had some paroxysms of coughing, was nauseated and breathed with difficulty for a while. It was given castor oil with no results.

I saw the child two days later. It had taken no food and very little water, was apathetic, listless, looked pale. Temperature was 100.6, there were bronchial rales on both sides, and the child seemed quite toxic. X-ray in this case showed a disk in the lateral plane of the body, therefore it must be in the esophagus. This was removed under general anesthetic at the hospital. The child left the hospital two days after, in very good condition except for a slightly roughened breathing.

USES OF THE ULTRAVIOLET RAYS IN CERTAIN EYE, EAR, NOSE AND THROAT DISEASES

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Read before the Maricopa County Medical Society, April 4, 1927.

Perhaps most of you are more familiar with the history and theory of ultraviolet rays than you are with the actual good they may do when used on the proper case and in the right way, so I will omit all that rehashing and, instead, will relate to you in a very brief manner, my own experience.

The operative technic and dosage are very important, varying with type of pathology, location of the pathology, type of patient, and, of course, type of lamp. For practical purposes I have found that the reactions to be effective must necessarily cover three stages; viz: a stimulative erythema or reaction—that which produces a faint flush of the surface a few hours after exposure; second, a regenerative erythema—that which is a more marked hyperemia without actual blistering; third, a destructive erythema, which, of course, is the most extreme reaction.

The first group of cases which I will describe are those of pathology of the lids:

Miss B., stenographer, had growth in the upper right eye-lid which was a chronic inflammation of a Meibomian gland. She very obstinately refused an operation although the tumor mass was gradually enlarging. It was not pustular, but was very firm and non-movable. The technic used was as follows: A quartz applicator 15 mm. in diameter was firmly pressed against the tumor through the skin for the period of 4 min. When the patient returned on the fifth day the skin was peeling and the tumor mass was slightly smaller. Three other similar treatments were given at six day intervals and the growth disappeared within three weeks, leaving a slightly pale spot at the previous site of tumor, which also disappeared in two months. There has been no recurrence after ten months.

Mrs. W., bookkeeper in recorder's office, complained of pain in the lower right lid for the past two days. There was a tender painful circumscribed mass near center of edge of lower lid, with considerable chemosis; this, of course, you will readily diagnose as hordeolum. Treatment was as follows: 15 mm. quartz application in firm contact against the swelling for 4 min. and 15 sec. over adjacent conjunctiva at approximately 10 mm. distance. No further treatment was given and the inflammation and swelling disappeared on the fourth day.

Mr. L. Upper lid was very edematous and conjunctiva congested, which caused much discomfort. Duration was only over night. Treatment was as follows: 15 mm. quartz application in firm contact for 2 min. On the second day swelling and edema were receding, leaving a firm palpable mass in the deep part of the center of the lid. This was further treated by quartz contact for 4 min. at three days intervals. The growth disappeared after six treatments.

To avoid unnecessary repetition of case histories, will say that practically all similar pathological cases coming under my observation and care are receiving this type of treatment with satisfactory results, either aborting or hastening the destructive process, which, of course, shortens the disease.

At this time I am reporting only one case of gonorrheal ophthalmia. The nature of this case and the results obtained were so striking that it seemed an error not to report it.

This patient, an adult, had been treated by a general practitioner for three or four days, with "home treatments," which consisted of boric irrigations, argyrol, etc.. When first observed at my office the

lids were so swollen and edematous that the cornea could not be seen; however, the pus, which was very abundant, managed to flow freely from between the lid margins. The smears were alive with gonococci and the patient was in intense pain, having slept but little for the past two nights. The first treatment consisted of an attempt to remove all the pus possible, after which the usual quartz application was placed against the swollen lids for 1 min. The patient was urged to go to the hospital where he was to have constant attention. His wife telephoned me late in the afternoon that he would not go to the hospital. I then informed her that I would not continue the case; however, I would talk it over with them more in detail if they would return to the office early next day, which they readily agreed to do. The next morning, things were different, the pain was practically all gone, the swelling and edema lessened so much that I could examine the corneal ulcer, which had already developed almost over the pupil. My attitude was necessarily changed; however, promised them very little unless he went to the hospital. Atropine and the sovereign remedy were used as in any other case. The quartz was used twice daily Sept. 15 to 18, once per day Sept. 19 to 24. The pus stopped on the 22nd and no organisms could be found on the 24th. The pain was of minor importance after the first treatment. The days under my care were 11 and treatments 16.

The fact that the pain and duration were so greatly lessened in comparison with the average run of cases in the hospital, is certainly worth some further investigation and consideration in this particular type of case. These infections are always rightfully considered serious, painful and of long duration and usually result in some form of permanently impaired vision. In this case the vision on Sept. 25th was 20/40 in the eye involved.

Conditions next under consideration are those of the throat. In my personal experience I have found very few pathological conditions in this field where the rays did any good and will mention only two. The first is pharyngitis—those cases where you see the thick, beefy vertical bands behind the posterior pillars. Here we must give these folds of new growth the third or fourth degree erythema. The reaction is severe but in practically all cases the patient will experience enough relief so that he will ask to be treated again, usually two to three months later.

The other condition is that of Vincent's infection. Where the patches of infection come directly in the path of the rays, the pain and duration are cut short rather markedly.

Next, and last, are the ear conditions. Those cases of external otitis in which there is an intolerable itching, are most readily relieved by the quartz application in all those canals that are straight enough to allow exposure of all the surface to the rays. Usually four to six treatments are required. In mycosis due to any kind of fungi, the *Mucor* species is most readily affected. In this condition the rays are absolutely specific. I will report one case, as follows:

A young married lady had a "running ear" for 18 months, with pain and deafness. She had many treatments, she claimed, both here and in Los Angeles. On examination, I found the canal packed full of "wet paper-like" material, readily diagnosed as fungus growth. The laboratory verified my diagnosis as being *Mucor*. The canal was cleaned very thoroughly and the quartz was easily applied to all the internal surface of the canal for 100 seconds; this was repeated the second day. The two treatments were all that was necessary to cure a condition that had existed for 18 months.

Long direct exposure of the pustular area in otitis media no doubt aids in clearing up these old chronic cases, and will lessen pain, where it exists.

Several have asked me if it pays to buy a lamp for producing the ultraviolet ray, in the treatment of eye, ear, nose and throat conditions. You may have an answer so far as I am concerned in the following summary: I have found only one condition in which the rays are specific, and that is in a rare pathology; viz: mycosis. If the rays are actually deadly to the gonococci, as they seemed to be in the case which I have related, then it will pay to have them, if for nothing else. It costs quite a little sum of money to have one of these lamps, and they must be renewed quite often unless they receive the best possible care.

Last but, possibly, not least, are the psychological features in connection with these rays. This may be the most important reason why you should spend seven or eight hundred dollars for one of these brilliantly burning lamps, the description of which today is being widely broadcast by the manufacturers and agents through lay journals, magazines and the newspapers throughout the land.

ERRORS OF REFRACTION IN CHILDREN

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Read before the Maricopa County Medical Society, April 4, 1927.

It is not my purpose in presenting this subject to give a highly scientific and exhaustive discussion of refractive errors in children, but rather to touch the salient factors in a practical way that will be of interest and value to the general practitioner.

The most common type of refractive error found in children is hyperopia. In fact, it is rare to find myopia, or near-sightedness, existing in children. Exceptions to this rule will be spoken of later.

The eyes of the infant are hyperopic; as the child grows, the anteroposterior diameter of the eyeball also increases, until, at the age of adolescence, they become em-

metropic, or nearly so. If the elongation fails to take place, or takes place only to a certain degree, there remains a hyperopia during the entire life of the individual.

There are many signs and symptoms by which hyperopia may be recognized in children. Chief among them may be mentioned blepharitis, frequent attacks of conjunctivitis, recurrent crops of styes, child complaining of blurring when he reads. Often you will note that the child will hold a book very close to his face when he reads. Your first impression would be that the child is a myope. It is much more likely that he or she is a hyperope and holds the book very close on account of a spasm of accommodation. Holding the print closer gives a larger retinal image with diffusion circles. You may have noted that certain children read very slowly, with the eyes squinted so that they look through a narrow palpebral fissure. They are usually far-sighted.

There are various functional disorders in which eye-strain, chiefly hyperopia, plays an important part. Among these may be mentioned gastro-intestinal complaints, chronic constipation, dyspepsia, chorea, etc. In addition to all the above mentioned complaints, the child may complain of headache, either frontal or fronto-temporal, which may be accompanied with nervousness. We all see the nervous child in the course of our practice, and hyperopia and hyperopic astigmatism may be playing a substantial part in causation of the trouble.

Frontal and supraorbital headache, when unilateral and when sinus conditions can be ruled out, are invariably due to anisometropia.

Vertigo may be complained of, and is apt to be found in a hyperphoria or muscle imbalance. Children complaining of car sickness will often show astigmatism with hyperphoria.

Many children thought to be subnormal and backward in their school work, upon examination will show refractive errors, the proper correction of which will result in marked improvement in school work. The detection of these cases is always a source of satisfaction to the ophthalmologist.

How can one recognize hyperopia objectively? The far-sighted eyeball looks smaller than normal. The distance between the eyes is apt to be narrow and the child may have a small face. If the eyeball is turned inward sharply, we see the equator at the outer portion of the palpebral fissure turn back sharply. The anterior chamber

is shallow and the pupil is contracted in size.

Vision will usually be good, 20/20 or 20/15.

I have purposely deferred mentioning squint until now so that special emphasis may be laid on it. Three-fourths of all cases of convergent squint are due to hyperopia.

If the hyperopic child wishes to see clearly for near vision, he has to make an exceptionally strong effort of accommodation. He can do this only with the aid of strong convergence. This causes him to see double, but he will prefer this to seeing indistinctly by using the normal amount of convergence. He then learns to suppress one image, usually that of the more hyperopic eye, and a strabismus develops. This condition is usually periodic, at first, later becoming a constant and fixed deviation. The more hyperopic eye is the one that is more apt to deviate. If the refractive error of both eyes is about the same, then an alternating convergent strabismus is apt to develop. The child will fix, then, with either eye, the non-fixing eye deviating inward.

This strabismus develops between the ages of two and six, first for near objects, and later for distant objects.

From two to six years of age is the all important time in the development of convergent strabismus. How often have we been told by the mother that she has been assured by her family doctor not to worry, that the child will outgrow it in time! Such misinformation is reprehensible, to say the least, and shows absolute unconcern over the future welfare of the child. About the time the child is supposed to grow out of it, examination will reveal a convergent strabismus, fixed and unalterable, with an amblyopic eye. Operative measures after this time will probably not improve the vision materially, although the cosmetic result may be good.

The greater portion of these cases can be cured; that is, the squint can be prevented by the careful correction of the refractive error. The lenses prescribed should be a full correction and worn constantly. Atropine, and not homatropine, should be the drug used to establish cycloplegia. I prefer to skiascope at a distance of one meter, using the Shayan lamp.

I have prescribed for many children between two and three years old, although it is necessary sometimes to keep the glasses strapped on.

At this time I would like to mention that the squint we so often see in children under two years is not a true convergent strabis-

mus, but due to the fact that these children have not yet learned to exert the exact amount of convergence. The strabismus which is of great interest to the oculist occurs between the ages of two and six years.

Myopia, as opposed to hyperopia, is an acquired disease. It is rare, exceedingly rare, in the early school age, but on the increase in our high school and university students. Especially has this been noted in Germany.

One may recognize this condition by the large, prominent eyeball—it may appear "pop-eyed." The interpupillary distance is usually rather wide. There may be a divergent squint. Distant vision is poor, dependent upon the degree of myopia. The patients are usually book-worms. The myopic child is usually literary in taste and is apt to rank high in his class. As a general rule he has little desire for athletics, baseball, football, etc.

The myopic eyeball is longer than usual. The eyeball at the equator does not turn sharply back, as does the hyperopic eye but continues almost straight back. The anterior chamber is apt to be deep and the pupil large. The refraction power of the eye may be greater than normal; for example, an increased curvature of the cornea, increased curvature of the lens, or a lens density greater than normal.

Because the child sees indistinctly at a distance, he will often squeeze his lids together. This causes him to see through a narrow slit and will often increase remarkably the vision for distant objects. Sometimes the child may not complain, and only routine examination will reveal the fact that his vision is half normal or even less. Or he may complain of sensitiveness to light and floaters in the vitreous. Occasionally, however, close work will tire the eyes, due to the disproportion between the convergence and the accommodation.

Myopia, when once begun, is apt to become progressive, particularly in school children. Coincident with the progression, come certain destructive changes in the choroid, retina, and vitreous, which may, in later life, lead to blindness.

Among the causes of myopia may be mentioned: (a) A certain hereditary predisposition, which may manifest itself in poor hygienic surroundings and after acute illness, especially the eruptive fevers; (b) poor illumination; (c) too close approximation to work, bending too low over desks and getting work too close to the eyes.

As prophylactic treatment, the following may be mentioned: (1) Careful periodic examination of vision in school children—a vision of 20/20 does not necessarily mean a normal eye, as I have mentioned before; (2) correct posture, which can be more easily obtained by the proper desks, etc.; (3) proper illumination.

Treatment of the condition, when once discovered, is, of course, wearing of the proper glasses constantly. The prescribing of these glasses requires the attention of a competent oculist and should in no case be left to the optician. A full correction must be insisted upon.

As to the treatment of hyperopia and hyperopic astigmatism, it goes without saying that the proper glasses should be prescribed. In general the more completely the hyperopia is corrected, the better it is. Children will accept their full correction quite readily, especially if prescribed while the effects of the cycloplegia are wearing off.

In this short paper astigmatism will not be gone into in detail. Suffice to say that it is either congenital or acquired, and apt to be bilateral. If of high degree, it is often associated with other defects in the development of the eye. Treatment, of course, consists of correction by the proper glasses.

In closing, I might mention that we are fast becoming a nation of glassed people and rightly so. The child of today has a far better chance to secure and maintain good eyesight than the child of yesterday. A great opportunity for the family physician, in raising the standard of vision among our school children, lies in the recognition of errors of refraction and insistence upon examination by competent oculists.

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ASTHMA OF NASAL ORIGIN

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As with all my colleagues, no doubt, each winter there fall into our hands, nose and, especially, sinus cases who have made the rounds. Many of these have been operated on numerous times. One of my patients last month had had nine distinct nose operations. These people have been worked upon by the best, or, at least, the reputed best men of the country: by some of the

leading lights of New York, Chicago, Cleveland, Ann Arbor, and Mayo's Clinic. I mention this to show that it was not poor technic that occasioned failure, but a wrong conception of the desired results.

It has been a coincidence, no doubt, that a great number of these nose cases that I have seen in the last year were asthmatics, their operative work having been done for the relief of this condition. One patient, (the case with nine operations) dates her asthma from her first nose operation. We are apt to take into consideration the prejudices of our patients and question a great many things that they tell us. In this particular case I not only believe what the patient told me to be a fact, but will go even further than she went and say that I am quite confident that her nose surgery caused the asthma. This only forges another link in the reasoning that has brought many to the conclusions to which I am leading. Understand that I realize that there are many instances of asthma; that not all nasal asthmas are due to the factor which I have in mind; but a great number of them, many more than are suspected, are due to this factor. One of the first things that we determine in dealing with asthma, is whether or not the patient has nasal polypi. Polypi stand out very largely in the minds of many of us as a direct etiological factor in this condition.

I originally thought that we had asthma in these cases, not because of the polypi, which were there, but because these same polypi indicated underlying sinus disease. Even here I have changed my mind to a certain degree. I often change my mind about these things medical. I wonder if I do more than the average doctor. Two years ago. I discovered the cure for hay fever. The reason that you have not seen this in the Journal of the American Medical Association, is that I again changed my mind. Call it coincidence or what you will, I operated on three consecutive cases who, at the time of operation, were suffering from hay fever. They all cleared up for that season—absolutely cleared up. I again started a line of reasoning and came to the conclusion that they had become relieved by an inoculation from their own secretions—that the opening up of the veins and capillaries in the nose had given sufficient absorption from the secretions to alleviate their condition. The next two which I did, not because the patient needed a nasal operation, particularly, but for the cure of

their hay fever, resulted in failure. I was terribly disillusioned.

But to get back to my text, I will mention some individual cases. Owing to the circumstances surrounding the case, I will make special mention of Mrs. T, in the northern part of our own state. Doctor Brownfield had done some very extensive sinus work on this patient, for the purpose of curing her asthmatic condition, a few weeks previous to his death. Two months later, I saw the patient and she still had her asthma just as bad. High up on the right side of the nose there was an absolutely tight point of contact between the lateral wall of the nose and the septum. The only thing I did—the only thing that was left to do—was to correct this condition. The last time I saw this patient she had had no more asthma.

This winter I have had three cases in the same category. I wish to mention especially Mrs. H, a tourist from Chicago, referred to me by Doctor Bannister. Nine times this lady had her nose operated upon. I am not sure what all the operations were for. Here is the picture I found on this patient's nose. Adhesions, probably post-operative, between the anterior end of the middle turbinate and the septum on the left; on the right side, complete adherence of the septum to the nasal wall, in an area, I should say, one inch in diameter. This patient stated that her asthma resulted from her first nasal operation. No doubt the adhesions resulted from the first operation. Carrying the argument a little further, according to the rules of logic, I believe that her asthma was a direct result of the operative procedures. This is one of the three cases more or less identical that I have seen in the last few months. Incidentally, I will mention that this last patient and the entire series of cases were cured of their asthma. The following are the things that I have been leading up to, and, in conclusion, particularly wish to emphasize.

1. Asthma is more frequently due to nose pathology than is generally supposed.
2. Polypi are causative factors, not necessarily because they indicate underlying sinus disease, but because of the mechanical irritation.
3. The greatest and outstanding factor is the presence of false points of contact or actual adherence of tissue, most frequently between the turbinates and the septum.
4. Asthma is frequently caused by post-operative adhesions; and the temporary character of many good results can be explained by the formation of these adhesions.

TUBERCULOUS MENINGITIS: CASE REPORT

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Read before the El Paso County Medical Society,
March 7, 1927.

Meningitis carries with it such a grave prognosis that it is very important to make a definite diagnosis with as little chance of error as possible. This fact is emphasized by the following case report. The patient whose record will be presented was treated by us for pulmonary tuberculosis for a period of two years with satisfactory improvement, up till the time of her acute illness beginning Sept. 16, 1926. During my absence, my associate, Dr. Hendricks, treated the first episode of the patient's alarming illness from September 16th, until Nov. 1st. He told me that he believed the patient had meningitis. The history of her illness was as follows:

The patient, an inmate of a convalescent home, was taken suddenly ill on the afternoon of September 26th, and, according to the proprietress of the home, had something resembling a convulsion, in which her eyes rolled backwards, limbs jerked and body twitched. In a few hours she was so ill that a special nurse was called, and her record states that patient was suffering with severe pain in the back of head; the pain and vomiting were so severe that two drams of papine and three-fourths grain of morphine were given in six hours (by hypo.), without obtaining relief. During the following four days, severe pain in the head, nausea, vomiting, blurred vision with partial coma on September 20th, were the chief symptoms. Temperature ranged from 102 to 104, with pulse irregular and rapid. Beginning Sept. 22nd, symptoms gradually abated, and during the several weeks following Sept. 25th, there was no temperature rise, except during a two day attack of tonsillitis. Pain continued, with administration of one and a half grains of morphine every twenty-four hours.

Dr. Hendricks, out of consideration for this patient's limited finances, had not had spinal fluid examined, but was done on Nov. 2nd, with the following report (Dr. Turner): Pressure 10, clear, cell count five; globulin not increased; sugar not increased; Wassermann negative with six, twelve and fifteen drops; examination was, therefore, negative for evidences of encephalitis or meningitis.

On Nov. 4th, I called to see the patient and was rather surprised to note that she did not appear to be desperately ill. Her face was flushed, her pupils reacted to light and were of the same size; there appeared to be no rigidity of the neck muscles and the other neurological reflexes appeared to be negative. The record as noted above was given me. The patient was perfectly rational and with the assistance of the special nurse gave me the history somewhat as recorded below by Dr. Crouse.

On Nov. 12th, the symptoms and amount of morphine remaining the same, spinal fluid was again examined with the following report (Dr. Waite): Cell count one, faint trace of globulin, Wassermann negative.

On Nov. 17th, Dr. Crouse was called in consultation, the record of his examination is given in full:

Mrs. L. A. C., widow, age 27, multiplex operator, two years in El Paso, in rest home; usual weight 115-118 lbs. Born in Arkansas.

Chief Complaint: Outside of pulmonary tuberculosis, headaches, basal in type.

Family History: Father living; mother died at 52 of pulmonary tuberculosis.

Past History: Usual childhood complaints. First menstruated at 14, regular, painful; headaches precede and sometimes follow: duration, three to four days; clots at times; slight leukorrhea; backaches with periods. No bladder trouble. Bowels regular. Appetite good. Scarlet fever in 1916. Never strong. Appendectomy, clean, in 1923. Last winter fell down ten or twelve steps; tripped; not unconscious, no concussion. Married in 1923; husband lived three months and died of typhoid; patient never pregnant. No earaches. Headaches started last May, came and went. Ordinarily, temperature normal.

Present Illness: Started Sept. 16th, with high temperature, sore throat. Two weeks before had temperature for two days of 102. Some headache and delirium. At times, unconscious. Pain ample to have morphine ever since, with spells of unconsciousness, delirium, twitching all over the body. Eyes turned up in all spells; grinding of teeth. Does not now run fever, as a rule. Chart shows temperature Sept. 17th to 23rd, with high point 104. Vomited constantly for a week. On Nov. 11th and 12th, had spinal punctures, after which temperature rose to 101.3, with chills and fever on the 13th. Manometric pressure 10; fluid negative.

Physical Findings: Pulse 176. Lungs: right lung shows latent rales following cough from apex to fourth rib up in front, and left lung to angle of scapula behind. Tonsils: bad, follicular. Teeth: no pyorrhea. Heart: apex beat in the fifth inside and one and a half inches below nipple; heart normal in size; accentuated second sound over pulmonary. Liver: normal lines. Gall bladder: Murphy and hook tests negative. Stomach: no pulsating abdominal aorta; normal position; increased in size. Kidneys: normal in size; no masses in abdomen. Skin: marked dermatographia; acne; large lipoma over the third dorsal; no capillary changes in chest wall. Neurological: pupils equal in size, no irregularity; react somewhat sluggishly to light; all superficial and deep reflex tests negative. Joints: negative. Spine perfectly straight. Glands negative, except toxic goiter, left lobe. Hysterogenic zones exaggeratedly positive.

On Nov. 25th, Dr. Schuster examined the eye grounds and reported as follows:

The right vision is 15/30; the left vision 15/40. There is a moderate degree of hyperopic astigmatism. The lids, lachrymal apparatus, external muscles, function normally. Cornea clear. Pupillary reaction normal to light and accommodation. Media clear. The fundus shows a suggestion of pallor of the nasal portions of the disc, while the temporal portion shows a moderate degree of hyperemia, with a suggestion of elevation of the disc margin. The arteries are somewhat narrowed and the veins somewhat tortuous. Otherwise no definite pathology is found, except for the slight hyperemia of the discs. The fields of vision show a concentric contraction for white and colors, but the retina shows abnormal fatigue, so there is a tendency for the fields to contract spirally as we repeat the test; this latter, of course, is suggestive of hysteric condition.

The nose and throat are normal and the sinuses clear on transillumination. Her hearing is normal. The drums are slightly retracted. The labyrinth tests (caloric and rotation) gave normal responses for nystagmus and past-pointing.

Conclusion: There is a slight hyperemia of both discs which might be associated with an intracranial condition. I would, therefore, suggest an x-ray examination of all the sinuses, especially the posterior group and hypophyseal region. She should be ob-

served from time to time and her eye grounds gone over.

On Nov. 28th, patient went to Dr. Schuster's office for more complete examination. Dr. Schuster's findings, while suggestive, were not absolutely conclusive for intracranial lesion.

About Nov. 17th patient was told that all her examinations indicated that she would recover and that the amount of morphine must be reduced; she was now taking one and a half grains daily. The patient readily agreed and in less than one week's time, she was off of morphine, but had to take bromides in rather large doses for a few week's time.

SUMMARY

From the record it is evident that the patient's illness began on Sept. 16th with something like a convulsion and for nine days, up until Sept. 27th, she ran a fever as high as 104°. She had vomiting, pain in the neck and head so severe that she was only partially relieved by three-fourths of a grain of morphine in addition to two drams of papine. Her vision was disturbed, at times she was unable to talk and unconscious at one time for a period of six hours. Did she have tuberculous meningitis? If not, what did she have? She recovered to such an extent that, in the second part of her illness when she was treated by me and examined by consultants, the symptoms and examinations pointed strongly to a hysterical element, but no one can deny, after reading the record, that this tuberculous patient suffered an acute and severe illness from Sept. 16th to Sept. 25th, the outstanding symptoms of which appeared to be due to meningitis.

DISCUSSION

1. In reviewing the case, it is evident that a laboratory examination of the spinal fluid of this patient should have been made during the acute illness between Sept. 16th and Sept. 25th. However, the early symptoms of this case were so typical of tuberculous meningitis that, as stated, Dr. Hendricks, out of consideration for his patient's finances did not have laboratory examinations of spinal fluid made at that time.

2. It also seems probable that after the acute symptoms had subsided the patient and nurse probably magnified symptoms of pain and nausea; that morphine was kept up for a longer period of time than absolutely necessary.

3. Patients do occasionally recover from tuberculous meningitis and this patient may be such a case.

Two cases of tuberculous meningitis in adults, with recovery, are reported by Gehrcke and by McMahon. In Gehrcke's patient, thirty-three years of age, diagnosis

was established by smears and animal inoculation of the spinal fluid. The case was characteristically chronic; during the sixth week there appeared focal symptoms—paralysis of the face, arms and legs, and motor aphasia. After this the meningitis became remittent. There was also encephalitis. Repeated lumbar punctures showed the favorable course of the case.

Its remittent character, with several exacerbations, was also a striking feature of McMahon's case. The patient was a white female, twenty-eight years of age, who had been treated for pulmonary tuberculosis with positive sputum. Her meningitis began with headaches, malaise and fever. All the classical symptoms developed as usual. During the eleven months the patient had exacerbations of fever and meningeal symptoms with afebrile intermissions. Except once, the spinal fluid at lumbar puncture was never under increased tension. During the febrile periods the patient would be in coma, from which she could be aroused with difficulty. After almost thirteen months the patient was pronounced cured of her meningitis, and her pulmonary condition was definitely improved. Nine months later she was reported well and doing her housework. Two specimens of spinal fluid, removed at intervals during the first two months were positive for tubercle bacilli by animal inoculation. A third, at five months, was negative.

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DISCUSSION

DR. C. M. HENDRICKS stated that all symptoms in the early phase of the case pointed to meningitis.

DR. R. B. HOMAN stated that there had been a few cases of recovery in tuberculous meningitis and that he concurred in the diagnosis of this case.

DR. J. A. RAWLINGS stated that he did not believe it a case of meningitis. The onset was too sudden, too violent, though his observation of meningitis was limited to the disease in children, he felt the case strongly suggested encephalitis.

DR. G. WERLEY was not convinced from the history presented that this was a case of meningitis. Hysteria could not entirely be eliminated, in fact, hysteria was strongly suggested because, largely, doses of opiates failed to relieve the headache.

DR. F. P. MILLER said that a number of cases of tuberculous meningitis had been reported cured, but in carefully reviewing the history of these cases, the diagnosis had not been authenticated to his satisfaction. He was rather skeptical about the recovery from this disease, feeling that recovery pointed strongly to a diagnosis of encephalitis.

DR. HARRY LEIGH said that encephalitis symptoms are variable and do not run true to form. He cited Holt as saying that tubercle bacilli could be found in every case of tuberculous meningitis if the spinal fluid is examined repeatedly.

DR. W. W. BRITTON recited a case, the early

phase of which resembled influenza, in a case of advanced pulmonary tuberculosis. There was improvement for four or five days, when the patient developed nausea and vomiting. The temperature and pulse dropped to subnormal and slowly the case developed the classical symptoms of tuberculous meningitis.

DR. E. J. CUMMINS asked if meningitis would seriously be considered in this case if it had not had tuberculosis. He believed that a study of several spinal fluid analyses would invariably suggest meningitis when it existed.

DR. ORVILLE EGBERT stated that failure to note the neurological findings from day to day in the early phase of the case, the absence of psychoses, and early and frequent examination of the spinal fluid precluded the possibility of making a diagnosis of tuberculous meningitis in this case.

DR. E. B. ROGERS asked the question how it was possible to prove diagnosis of tuberculous meningitis in a recovered case.

DR. LAWS, in closing stated that he never had seen conclusive proof of a diagram of tuberculous meningitis in a case that had recovered, however, he felt the history of the early part of the illness in this case strongly suggested the diagnosis.

BOOK REVIEWS

This Business of Operations, by James Radley; foreword by J. M. Withrow, M. D.; Chief of Staff, Christ Hospital, Cincinnati; The Digest Publishing Company; 1927.

Mr. Radley is truly a philosopher; here is his spirit portrayed: "Knowing he was going to win and not giving a hang anyhow if he lost." If the lay public in even a reasonable minority reads and properly appreciates this little book, the author will be a great benefactor.

To be sick, in the best way, is both an art and a science, in which all too few have been trained. The business of being sick, better, the business of getting well, deserves keen attention.

The story is told in charming style. The author is an artist in word painting.

International Clinics. A quarterly of Illustrated Clinical Lectures and especially prepared Original Articles on Various Subjects—by leading members of the medical profession throughout the world; edited by Henry W. Cattell, A. M., M. D., Philadelphia, with the Collaboration of 17 prominent medical men of the world; Volume III, 36th Series, 1926; J. B. Lippincott Company, London and Philadelphia, 1926.

This volume has a goodly number of high type essays on subjects of interest in various phases of medical science.

The outstanding contribution is a biographical sketch of the late Right Honorable Sir Clifford Allbutt, K. C. B., M. D., F. R. S., written by Sir Humphrey Rolletson of Cambridge, England. The biographer says the Royal College of Physicians, of London, has had to mourn, in recent years, the loss of three great physicians, Sir Wm. Osler, (1849-1919), Sir Norman Moore (1847-1922) and Sir Thomas Clifford Allbutt (1836-1925).

Linking the name of Allbutt with that of Osler is sure to impress the American reader with the greatness of Allbutt. His was not only a long life but an active one. He was a prolific writer—an

authority. His association with Paget, Bence-Jones, Raynaud, Teale Broadkent, Foster Mackenzie Moore, Osler and others, placed him a galaxy of medical stars, all notable for brilliance. That Allbutt's lustre is not dimmed by such company is testimony of his greatness. He was a scholar physician. Posterity will undoubtedly hold him as one of the medical stars of all time.

The biography of Allbutt is sufficient to recommend this volume. There is also other choice material.

The Surgical Clinics of North America — Mayo Clinic Number—October, 1926, issued serially, one number every other month; Volume VI, Number 4: 274 pages with 91 illustrations; per clinic year, paper \$12.00, cloth \$16.00 net; Philadelphia and London; W. B. Saunders Company.

A highly interesting list of subjects is discussed in this issue. To the man interested in physiological studies the article by George M. Higgins and Frank C. Mann, entitled "Considerations of the Gall-bladder with Reference to the Process of Emptying," will have a peculiar appeal. Their conclusions, which seem to be wholly warranted, are to the effect that the gall-bladder empties itself through the cystic duct by contraction of its own intrinsic musculature and that secretory pressure from the liver and intra-abdominal pressure, are only minor factors in emptying the vesicle. The sphincter of the common duct is not an inhibitor to the flow of gall-bladder bile.

Among other interesting subjects are: Analgesic Effects of Roentgen Rays; Actinomycosis of the Tongue; Acute Inversion of the Uterus; Suture of Bloodvessels; Retrotracheal Goitre; The Colon as a Urinary Receptacle; Hirschsprung's Disease; and others.

The surgeon will find a world of helpful material in *The Surgical Clinics of North America*.

The Surgical Clinics of North America, (issued serially, one number every other month); Volume VI, Number 3, Chicago Clinic Number — August, 1926; 325 pages with 101 illustrations; per clinic year (February, 1926 to December 1926), paper, \$12.00; cloth, \$16.00 net; Philadelphia and London; W. B. Saunders Company.

There are five clinics on gastric and duodenal ulcer and other diseases of stomach and intestines; six, on bones and joints; three, on pulmonary affections; and single clinics on Hodgkin's disease, echinococcus cyst of the liver, hyperthyroidism in connection with diabetes, branchial cyst, multiple suppurative arthritis, tumors of the cauda equina, ovarian enlargements, biliary disease, and other interesting subjects.

A clinic is always interesting and instructive. The next best thing to being in actual attendance at a clinic of a competent teacher with interesting cases, is to be privileged to read of that clinic. The Clinics of North America supply to those separated from medical centers that very opportunity. This volume is valuable because of the wide variety of subjects presented.

Annual Reprint of the *Reports of the Council on Pharmacy and Chemistry* of the American Medical Association, for 1926, with the comments that have appeared in the Journal; President of the American Medical Association; Chicago.

This volume should be upon the waiting room tables of all practicing physicians.

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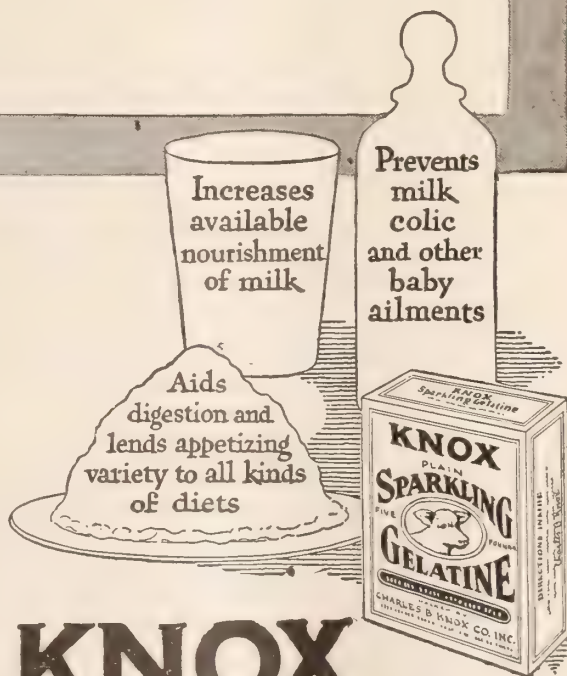
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Volume XI.

JULY, 1927

No. 7

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POLIOMYELITIS IN ARIZONA AND NEW MEXICO

The appearance of infantile paralysis in the Southwest, to an unusual degree this summer, has caused considerable concern. In Arizona, the city of Phoenix has suffered most, while in New Mexico, more cases were reported from smaller cities than from Albuquerque. It is difficult to judge of the extent of the disease in Arizona, because of the irregular and peculiar methods of collecting vital statistics in that state, but there were probably twelve or fifteen cases in Phoenix and vicinity, with four or five deaths.

In Phoenix, the anti-streptococcic serum (poliomyelitic) has been used in several of the cases, and it is to be hoped that the results following its use may be reported. The Bureau of Public Health of New Mexico, in its special bulletin of instructions and advice regarding this disease, did not encourage the use of the serum. There should be an opportunity for comparison of results, if some one is sufficiently interested to make a careful investigation.

MEDICAL LEGISLATION IN ILLINOIS

We have followed with considerable interest the work of the Legislative Committee of the Illinois State Medical Society, in their efforts to combat some forty-five pernicious bills designed to lower the educational requirements of those who desire to treat the sick in that state. Through the cooperation of the county medical societies and individual physicians, all of these bills were defeated, although after strenuous effort and against the best organized and best financed lobby of quacks and cultists

ever before focused upon any legislative body. IT CAN BE DONE, whenever and ONLY whenever, the medical profession unite and stay united in a persistent campaign to enlighten the conscientious ignorance of the average legislator on matters pertaining to health.

THE LAYMAN STUDIES SCIENCE.

"Things are too big for comprehension," says Sir J. J. Thompson, the eminent British physicist. "When you and I were kids" the molecule was usually regarded as quite small enough for all practical purposes, but even then there was some talk of an assumed thing, smaller still, called an atom, from the Greek "atmos," meaning indivisible. Science used that assumption as a sort of vanishing point in the matter of size, even though the atom could not be seen or measured. But that did not last long. Scientific investigation went to work vigorously on the atom and it was not many years before new processes began spattering atom parts all over the place and incidentally made its name worthless by showing that it was extremely divisible. The atom was found to be made up of electrons and protons several thousand times smaller than the atom itself, and with plenty of space in the atom for circulation of its constituents almost like the planets of our solar system. That might have satisfied the experimenters, but no! Professor Thompson asserts that we must go much deeper yet if we would find real secrets. Even the electron and proton must be split apart, and the end may not arrive even then." (Editorial in The Times Picayune of New Orleans, July 8, 1927).

When lay publications, especially daily newspapers, discuss such scientific material as in the above editorial, is it not time for physicians to give thought to the scientific part of medicine in order that they may not be surpassed in an understanding of many of our problems by that of occasional patients.

The laity is inquiring into the reason why, of many medical problems. They are reading *Hygeia* and other semi-scientific magazines and articles dealing with medical subjects. One patient of a Phoenix physician is a regular subscriber and reader of *The Journal of the American Medical Association*. There must certainly be many others. 'Tis true of course that far more of the ravings of faddists, than of good literature, is being read: but this should be taken, merely, as evidence of the laymen's hunger for medical facts. In the course of time the general reader will become cultured, if that word may be used in that connection, and discriminative in his selections of what to read for reliability.

Formerly many physicians thought, and even yet many hold, that the less the patient knows about himself and his possible illnesses, the better for all concerned. That day is passing. We should heed it.

DR. JOHN WIX THOMAS and DR. WARNER WATKINS, and families, of Phoenix, have just returned from a nine thousand mile tour of the eastern and northern states. They visited twenty-eight states, the District of Columbia and Canada during their eight weeks trips.

DR. and MRS. HARLAN P. MILLS, of Phoenix, are spending their vacation in northern New Mexico and southern Colorado, visiting the interesting archeological and historical points of that district.

DR. F. C. JORDAN, of Chandler, is now in the east taking postgraduate work in pediatrics. He will return some time in October and will be located in Phoenix, with offices at 16 E. Monroe St., where he expects to engage in the practice of pediatrics.

DR. S. I. BLOOMHARDT, of Phoenix, has moved his office from the Goodrich Building to 16 E. Monroe St. He is also building a very handsome residence in Country Club place.

DR. FRED T. FAHLEN, Superintendent of Public Health, was recently operated upon for removal of ureteral stone, following a severe attack of colic and impaction of the stone in the ureter. He is convalescing satisfactorily.

DR. FRED HOLMES, of Phoenix, is spending his usual vacation at Mormon Lake, where his exploits with the hook and line has decimated the piscine population of that resort to such an extent that an injunction against him is being threatened.

DR. SPENCER D. WHITING, of Phoenix, has returned from a vacation at Mormon Lake with a very handsome coat of tan.

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The Surgical Clinics of North America (issued serially, one number every other month.) Volume 7, Number 2 (Cancer Number—April 1927.) 231 pages with 113 illustrations. Per clinic year (February 1927 to December 1927). Paper, \$12.00; Cloth, \$16.00 net. Philadelphia and London; W. B. Saunders Company.

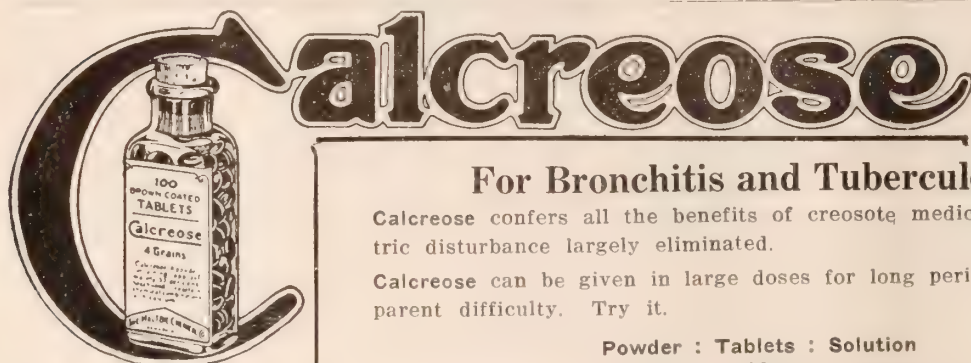
This book of 231 pages is devoted entirely to clinics and studies upon cancer from the Philadelphia members of the profession. These symposiums are highly valuable.

International Clinics—Volume II, 37th Series, 1927—J. B. Lippincott, Philadelphia & London.

President Coolidge's address before the 1927 Session of the A. M. A., together with articles upon allergic Disease and Climate, Heart Block Clinic, Multiple Myeloma, Diagnosis of Nerve Syphilis in absence of a positive Spinal Fluid, and others of importance make this volume valuable reading.

Physicians of the Mayo Clinic and Mayo Foundation. A series of 635 biographical sketches with 611 portraits and including complete and accurate data concerning the professional life of each physician prior to January 1, 1926. Octavo volume of 578 pages. Philadelphia and London; W. B. Saunders Company, 1927. Cloth, \$7.00.

This volume presents an interesting informative sketch of all physicians who have been connected with the Mayo Clinic and Mayo Foundation up to January 1, 1926. Perhaps the most valuable part of the book is the list of the writings of each physician. It is interesting that Charles Mayo is credited with 215 articles and William Mayo with 315.



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The first edition (1906) contained 128,171 names of physicians in the United States, its dependencies and Canada. The new Tenth Edition includes 164,002 names. There is an increase of 2,644 over the previous edition. If the Directory were merely a list of names and addresses of physicians it would not have great significance. That information is valuable, but of far greater value is the fact that the Directory gives proof of the right of each physician listed to practice medicine—name, time and place of graduation and year of license. In addition, society membership, specialty and office hours are included. Capital letters indicate those who are members of their county medical society, and a special symbol follows the names of those who are Fellows of the American Medical Association.

The information concerning hospitals and sanitariums of the United States is another valuable and extensive feature. Descriptive data appears following the names of 7,816 hospitals and sanitariums such as type of patients handled, capacity, and name of superintendent or director.

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tice in that state; members of licensing board, state board of health; names of city, county and district health officers; officers of constituent state associations and component county and district medical societies. The book, in short, is one vast source of reliable data concerning the personnel of the medical profession and the institutions and activities closely related to it. It contains 2,575 pages and is sold for \$15.00. Published by the American Medical Association, 535 North Dearborn Street, Chicago.

ALOE'S REMOVAL

The well-known surgical supply house of A. A. Aloe Company in St. Louis has been crowded out of their contracted quarters at 513 Olive street, (the optical store remains there) and are now located in the new Aloe Surgical Building at 1819-23 Olive street—only three blocks from the Union station. The removal was necessitated by lack of downtown parking facilities and the growth of their surgical business which required larger and better quarters. Visiting physicians should take note of the new location near the railway center.

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The Fifth Hospital Clinics—Editorial Board Joseph H. Fobes, M. D., Milton J. Raisbeck, M. D., D. S. D. Jessup, M. D., and Charles F. Tenny, M. D.; Illustrated; Paul B. Hoeber, Inc., Publishers; New York City; 1927.

This is a collection of papers published in various journals, in connection with cases in the hospital, together with material which has been pre-

sented at the semi-monthly staff meetings. There are 41 papers on a variety of subjects. Among those which attracted the attention of the reviewer were the subjects of asthma, heart murmurs, a urea test for kidney function, surgical treatment of pulmonary tuberculosis, physiotherapy in dermatology, convulsions in infancy, operation for hernia and others. The book shows clearly the value of hospital staff meetings and the importance of publishing the reports.

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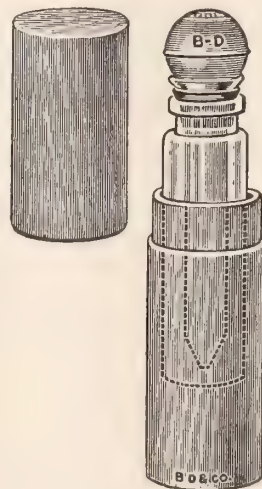
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New and Nonofficial Remedies, 1927; American Medical Association, 535 N. Dearborn Street, Chicago.

This book contains descriptions of all articles accepted by the Council of Pharmacy and Chemistry of the American Medical Association, up to January 1, 1927.

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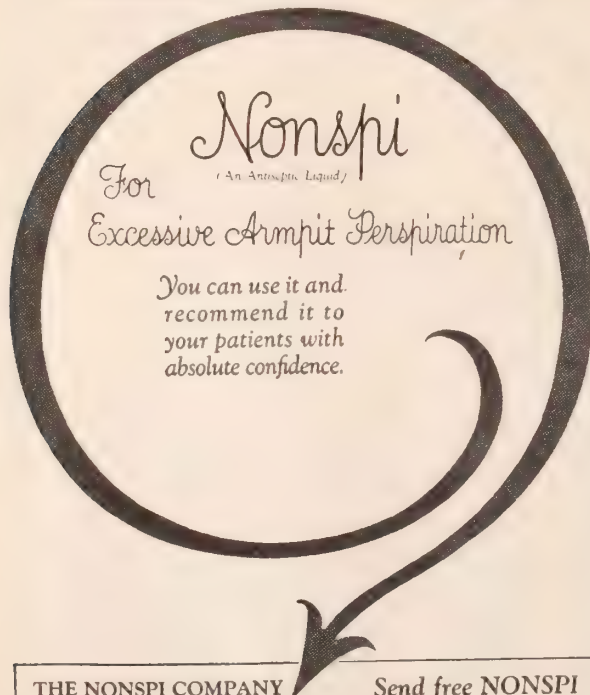
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SOUTHWESTERN MEDICINE

Volume XI

AUGUST, 1927

OFFICIAL ORGAN
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NEW MEXICO MEDICAL SOCIETY
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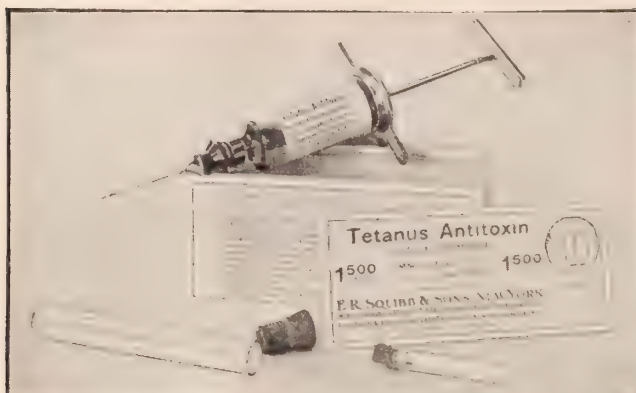
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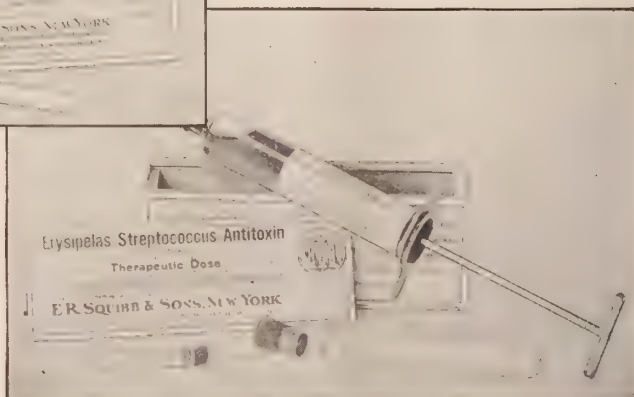
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CORRECT PRINCIPLES IN DIET

ORVILLE HARRY BROWN, A. B., M. D., Ph. D.
Phoenix, Arizona

Read before the Thirtieth Annual Meeting of the Arizona State Medical Association, held in Yuma, Arizona, April 21 to 23, 1927.

Were my subject not so extremely important, I would apologize for presenting a paper dealing only with assembled facts. Research upon diet has been going on in so many places in the past twenty years, and the results have so often upset preconceived notions, that keeping pace with the discoveries has not been an easy task for most of us. My intention is, in the main, that this paper shall be a resume, in brief, of those facts which we should teach our patients.

Variety. Each individual should eat as wide a variety of food stuffs as his age and condition will permit. The needs of the anabolic process are better served by a wide variety than by a narrow selection. We know, for example, that there are at least six vitamins and that these are not all supplied by any one food. Other chemical substances, so far as present day knowledge goes, may be of even greater importance than vitamins and a wide variety of food stuffs is most certain to contain all necessary elements. Someone has likened the body to a house. Either can be best constructed from a wide variety of materials rather than from a limited variety.

Habit is a factor of great importance in the whole question of diet. Each people has its own more or less characteristic methods of preparing foods and often a peculiar source of supply for many of them. The standard joke about "Mother's cooking" is proof that we are creatures of habit about what we eat. Granting that it does make a difference as to what we eat, it becomes important for us to try to develop the habits we should have about eating and to teach the same to our patients. But little will be accomplished with the adults, probably, until the time arrives that they

fully realize, as Osler said, that the grave is dug with the teeth. The old adage is so a propos when it says, "A horse can be led to water, but you cannot make him drink." We can be told what we should eat, but, in the preponderance of cases, we go right along eating what we were allowed, in childhood years, to eat.

Our program may well be directed, then, at the child and let the grown-ups simply absorb for themselves what they may and will. Children may be taught to like the things they should eat. This may not be easily accomplished. More than likely it will take years to get a child to actually like many of the things that he must be forced to eat. Vegetables are more difficult to acquire a taste for, it seems, than are most other foods. Therefore the parent should start giving the child tastes of vegetables just as early as, in the judgment of the physician, it is wise. It has long been the custom to give the babe a chicken bone or a bacon rind to suck before any other food than milk has been given. It would seem that a celery stalk or a carrot or a turnip or some other vegetable would be more appropriate and give a child a slight familiarity with the vegetables if not a taste for them. At the same time, a few drops of the liquor from whatever vegetables come to the family table may be put, by means of a clean spoon, upon the child's tongue before he has reached a rebellious age or a sufficiently rebellious age to keep the parent from doing it. As the child gets older his plate should be served with what the table affords and not according to his desires; and that only a polite amount is to be left on the plate, should be thoroughly understood.

What applies to the habit of eating variety of foods, applies also to the quantity. Many persons go through life eating too much food and are, consequently, too fat; others eat too small an amount and are, as a result, too thin. Habit is often the controlling factor. Most fat persons are reg-

ular eaters and enjoy food. Thin persons usually eat lightly and are irregular in their desire for food. In other words they are apt to be finicky. Teaching an obese person that he must regularly eat less food and less nutritious food, will cause him to develop habits of eating which will, in due time, give him a much desired reduction in weight. The opposite applies to thin persons.

The Correct Foods to eat are not necessarily the same for any two persons. If one satisfies the question of variety and quantity and then does not go to excess on any certain article, or articles, and is in good health and weight, there is little more that need be added, or profitably can be added. But for those who are not in good health or the proper weight, the character of the food may be of extreme importance.

The character of foods must be understood from the standpoint of their chemistry of the body in both health and disease.

Proteins are complex chemical substances. They undergo digestion in the stomach and intestines and absorption therefrom into the blood. From the blood, the split proteins may be taken and utilized for construction or reconstruction of important parts of the cell protoplasm.

In youth, the period of growth, the cell protoplasm demands a greater amount of protein than in adult life. In the event that an amount of protein in excess of the needs of the cell protoplasm is eaten, the body has to further oxidize the absorbed protein products. A long list of end products results, such as urea, uric acid, creatin, creatinin, etc., all of which are more or less toxic if present in sufficient quantities. The conclusions from these facts are that a person should eat just that quantity of protein which is demanded by the protoplasm for his growth or reconstruction and protein should not be a food eaten for the purpose of supplying energy. Protein is not an economical source of energy.

The body harbors bacteria of a greater or less grade of virulence. It has long been known that when virulent bacteria grow upon a protein mixture their toxins are more potent than when grown upon mixtures free from protein. This may easily be a question of extreme importance. It will certainly be of much importance whenever the bacteria are inhabitants of the alimentary canal, as they are apt to be in almost any sort of infection. Whether an excess of protein products would tend to make bacteria growing in the blood stream produce a more potent toxin or not, is a

question; but it would seem probable that the excess protein in the blood would stimulate the bacteria to make a more active poison. In infectious processes, then, an excess of protein is definitely contraindicated.

In processes in the body where active destruction of tissue is going on, an excess of protein in the diet adds an excess of protein split products to those poisons that are being produced by the disease. In such conditions an excess of protein is contraindicated. It may even be wise in many of these cases to prescribe a protein-free diet—or as near such as possible.

Fats are useful in the body for padding out the hollows and protecting soft structures. There seems to be little doubt but that they have much to do in some unknown way with immunity. The individual who has a fair amount of adipose tissue has, unquestionably, a greater protection against certain infections, notably tuberculosis, than have thin individuals. Fats are rich sources of energy. When there is normal carbohydrate metabolism in the body, fats are readily oxidized to carbon dioxide and water, neither of which is toxic. But if the carbohydrate metabolism is deficient, incomplete oxidation of the fats results and there accumulates in the blood such products as acetone, oxybutyric acid, and diacetic acid, all of which may be excreted in the urine. The person who is obese has sufficient fats of his own and hence should not have them in his diet. For the person who is thin and has a normal carbohydrate metabolism, a liberal quantity of fat should be regularly in the diet.

Carbohydrates are stored in the body in the form of glycogen and undergo oxidation, supplying energy, and the end products are carbon dioxide and water. In the event that an over supply of carbohydrate is eaten—more than is needed for supplying energy for the time being—the excess is stored in the liver and muscles in the form of glycogen.

If a time comes when not enough carbohydrate is taken to supply the energy demands for the immediate period, the store of glycogen is called upon; and if little or no carbohydrate is eaten, the store of glycogen is soon exhausted. The fat is then burned incompletely and a fatty acid poisoning and acetonemia results. The lesson from this is that a person should be supplied regularly with a reasonable quantity of carbohydrates. In febrile conditions, especially where the temperature goes high and remains so consistently, the

carbohydrate supply should be proportionately greater than in the normal person. It should be emphasized that carbohydrates are the easiest oxidized of any food, the end products from their katabolism are totally innocuous and they are essential to normal fat katabolism.

The tolerance of persons for carbohydrates should be known, because those who do not handle the carbohydrates well get disturbances from them.

Vitamins are elusive chemicals of unknown structure which are absolutely essential to health and even to life. They are believed to be at least five in number; when any one vitamin is absent from the diet serious disorders result. The absence of **vitamin A** in the diet of young animals results in failure to grow and a disease of the eyes, xerophthalmia, in which the eyes are very subject to infection, and it may even result in blindness. The absence of vitamin A also causes a general susceptibility of the body to infection and it is therefore essential for the maintenance of general health. It may also increase the length of life and be of importance in reproduction. Vitamin A is supplied by butterfat and milk, especially if the cows have been fed on green fodder; it is present in egg yolk, the germ of cereals, green leaves and cod liver oil. It is fairly resistant to heat, and drying. A liberal quantity of vitamin A bearing food should be regularly in the diet, although the vitamin is stored in the body to a limited extent.

The absence of **vitamin B** from the diet, in the young, results in a failure to grow; and in adults results in beri-beri. Recent work indicates that it has marked effect in stimulating the appetite and perhaps in sex interests and functions. It is present in largest amounts in yeast, but also in green leaves, spinach, lettuce, celery, asparagus, beans, peas, milk powder, the embryo of grains, and eggs. It is stable to drying; but it may be destroyed by heating to such temperatures as are used for canning. Uncooked vegetables will usually supply it in adequate proportions.

The absence of **vitamin C** results in scurvy. It is found in citrus fruits, cabbage, lettuce and tomatoes in large amounts, also in spinach, onions and fresh peas in lesser quantities. Milk, excepting the prepared milks, contains some C. Drying destroys vitamin C except it be in acid solution as is the case with citrus fruits. Heating is apt to destroy it.

Vitamin D, according to the latest information, has to do with assisting the body to make full use of calcium. It is

found in cod liver oil and is curative for rickets. D seems to be related to some product or effect of ultraviolet light. Foods with no D, when exposed to ultraviolet light, become antirachitic.

Vitamin E is essential for reproduction. Conception may result in its absence but the resulting embryos do not come to maturity. E is found in seeds, leaves, cereals, Wesson oil, crisco and olive oil. It is stable to heat and to drying.

The lesson to be learned from the study of vitamins is that a varied diet is to be eaten. Such foods as can be taken raw should be so taken. Leafy vegetables, the peelings of certain fruits, and milk and butter, should be regularly eaten. Foods that are too refined, as white bread for example, may have lost their vitamins. Most of all, the lesson is that the habit of eating vegetables, especially green vegetables, should be established in childhood, not only for the habit's influence in adult life but because children need vitamins.

Roughness is a property of certain foods which may have inestimable value in the relief of constipation as well as supplying vitamins and acting as bluff meals for those who should have bulk without rich nourishment.

The proper balancing of the acid and alkali ash equivalents of the foods seems to be of considerable and, perchance, of surpassing importance. Sansum classifies foods, with respect to their final effect upon the body, as neutral, acid or alkaline. One set of experiments reported by Sansum, which shows how important this subject appears to be, is as follows: A litter of rabbits was divided into two pens. One pen was fed grains and other foods which gave a definite acid preponderance to the ash of the foods. The other pen was fed a well balanced diet so that there were sufficient alkali ash foods to counteract the acid ash foods. The rabbits fed a preponderating acid ash diet died of arteriosclerosis, nephritis, and such affections, at about one year of age. The rabbits fed a balanced diet were still alive at the time of his telling of the experiment, which made these rabbits about three years of age. Sansum says it suffices to test the reaction of the urine to judge if the diet is balanced regarding the acid and alkali ash. It is nothing unusual, he says, to find the urine several hundred times as acid as normal. The test on the urine is made by means of two or more dyes—brom-thymol blue for the less acid urines and methyl red for the very acid urines will usually suffice. It is also necessary to have a color chart.

The neutral foods are butter, corn starch, cream, lard, sugar, tapioca. Acid foods are wheat products, corn, eggs, fish and meats of all sorts, oat meal, peanuts, and rice. Alkaline ash foods are almonds, apples, asparagus, bananas, beans, beets, cabbage, carrots, cauliflower, celery, chestnuts, currants, lemons, lettuce, milk, muskmelon, oranges, peaches, peas, potatoes, radishes, raisins, and turnips. The apples, bananas, muskmelon, oranges, and potatoes are highly efficient in reducing the acidity of the urine. There has long been a belief that the human race would be better if they ate more vegetables. The work on the acid and alkali ash plus that on vitamins may explain, in large measure, why the vegetables have been regarded as so essential. If the vegetables and other sources of alkali ash are as essential for us as Sansum's experiment upon the rabbits would indicate, they are indeed of great importance.

From the standpoint of **food sensitization, anaphylaxis and allergy**, the food that a person eats may be of extreme importance. Almost any part of the body may be affected by food sensitization. Duke makes the startling assertion that fifteen per cent of the population are affected by sensitization of one type or another. Probably not over one-half of the fifteen per cent have food sensitization. But, at that, if Duke's figures are anywhere near correct, there are a considerable number who have ill effects from diet due to sensitization. The way to prescribe a diet in such cases is first to test one's sensitization to the various foods by applying the concentrated proteins of the foods to scratches upon the skin or by the needle within the layers of the skin. This latter is the intradermal test and is probably to be preferred.

If my observations are correct, the person who is sensitized to certain foods becomes desensitized when he refrains from eating all foods to which he shows skin reactions. Eating those foods again in liberal amounts may produce sensitization to them. The person who is subject to sensitization should be tested and should eat none of the foods to which he reacts, for a month or more, and then he should avoid eating any article of food in large amounts and too frequently. This shows the importance of variety of foods in the diet.

Another procedure once described by me and which may be of great importance, is what I have called the **Food Addition Method**. This may be used in conjunction with the protein skin tests or without them. By this method the idea is to place the person

upon one or, at most, two or three articles of food, preferably foods which the person does not often eat. If these foods are of those to which the person is sensitized, he will be made worse, but if the foods he has been allowed to have are not affecting him, and some of those that have been eliminated are the ones to which he was sensitized, he should be improved. By adding one food at a time and observing the effect of it, one may draw fairly accurate conclusions as to the effect the various foods are having upon the person in question. This method may well be used to supplement the sensitization skin tests.

Salts are ordinarily present in a varied diet in adequate amounts to supply the demands of the body.

Sodium chloride has been used as seasoning by nearly every one in liberal quantities and, until most recently, there has been none to advise against it. There has been creeping into the literature of late, however, evidence that too much sodium chloride is deleterious, particularly for certain conditions. Allen holds that, in hypertension and nephritis cases, the sodium chloride should be restricted to a minimum. His contention is that the sodium chloride is highly irritating to the kidneys in those cases. It is his belief that most persons eat too much sodium chloride and would do well to restrict it. His method of determining whether one is consuming too much of the salt is to test the urine for its content of sodium chloride, and if more than one-half a gram is being excreted in the course of twenty-four hours, that person is not on a salt free diet. It is often very difficult to get a person on a salt free diet, as most foods have native sodium chloride which cannot easily be separated from them. It is possible to select foods which have a low native content of sodium chloride, but this, Allen believes, should always be done for all cases of hypertension and of nephritis. He also advises a low sodium chloride diet for obesity and numerous other chronic diseases.

Water should be drunk in liberal quantities with and between meals, unless there are specific contraindications. The drinking of water with meals was formerly thought to be contraindicated. But when the chemistry of digestion came to be understood it was realized that diluting the digestive fluids tended to hasten their activity rather than to reduce it. As diluting the body toxins tends to reduce their deleterious influences upon the cells of the kidneys and other organs, water should be

advised in large amounts whenever there is any undue toxemia of the body.

The estimation of the caloric value of foods is to be encouraged, especially for those who need to gage the amounts of their foods. For example, if a person is too heavy and knows how to estimate his calories and what the limit upon his calories should be, he is in a position to keep from eating such an amount as will add to his weight or he may even be able to reduce. The thin person can be sure he is getting enough calories to add to his weight, if he calculates them for each meal. There are several small books upon diet, on the market, which will help patients in calculating their calories, and physicians will do well to recommend these to their patients.

Hospital diet lists as prepared at present are, as a rule, nearly meaningless and need to be revised. I would suggest, in place of liquid, light, semi-solid, etc., some such list of diets as follows: fruit juice diet; carbohydrate gruel diet; vegetable soup diet; carbohydrate diet; fruit diet; vegetable diet; protein free diet; fat free diet; fat rich diet; high alkali ash diet; general diet; high caloric general diet; low caloric general diet; salt low diet; and salt free diet. By giving each of the above diets a number it would be easy to specify that one or more of the above diet groups be given any certain patient. The physicians and hospital dietician should have definite understandings as to the meaning of each diet so that there would be little chance of mistakes resulting. Someone may suggest better divisions than those I have proposed. But the working, with such a variety of, and suggestive, diet lists, would be comparatively simple for all concerned.

If a physician had an obese nephritic and wished to give him nearly nothing to eat and yet keep him from going into acidosis, and ordered the provided "light diet" as used by hospitals today, for him, he might get anything from lemonade or beef soup to oatmeal gruel and albumin water. But, were the hospitals posted on diets such as I propose, and the physician ordered fruit juices and sugar, he would have little fear but that the patient would get just what he wanted him to have and nothing that would aggravate the condition. Or, again, if the patient were a thin man with fever and the physician wished to keep him well nourished without risk of adding to his toxemia by using a high content of protein, the physician would prescribe a protein free diet. Were the patient running a temperature, he might wish to add a rich carbohydrate diet. Again, if the patient was a

young person who had what might be a developing tuberculous process, a fat rich diet would, likely, be ordered. I must have said enough to make us all realize that the conventional, liquid, light, semi-solid and other similar methods of designating hospital diets, should be passé.

CONCLUSIONS

A wide variety of foodstuffs should be eaten. The habit of eating all foodstuffs should be started in childhood at the earliest possible age.

There are two great classes of individuals—those who like food and are too heavy, and those who do not like food overly well and are too thin. There is an obvious third class. It is of little interest in this problem. The fat folk should endeavor to cultivate appetites for the coarse foods with low nutritive value, while the thin ones should cultivate appetites for all kinds of food but especially for the highly nutritious ones.

It seems to be established that attention should be given to having the diet balanced as far as the acid and alkali ash equivalents of foods are concerned.

In certain conditions too much salt is deleterious. Perchance, too much salt is generally being used.

Protein should be in the diet in just such proportions as the protoplasm of the cells demands for growth or reconstruction. An excess is an expensive source of energy and a dangerous one because of the toxic end products of katabolism.

The eating of fats should largely be indicated by the weight. A thin person should eat an abundance of fat, while the fat person has enough of his own without taking on any.

Carbohydrates should be the one most regularly eaten class of foodstuffs, because they are the most ready source of energy and produce no toxic products, when the body can use them, and they are essential to the proper burning of fat. It is well, however, to know the tolerance of the body for carbohydrates so that the tolerance will not be overtaxed.

All persons should know how to calculate the caloric value of their food.

Water should be drunk with and between meals: the quantities should be large in cases of toxemia.

DISCUSSION

DR. I. D. LOEWY, Whipple, Ariz. (opening): Dr. Brown has given a most excellent outline of the fundamental principles of diet; he could hardly do more than that in twenty minutes. Diet is a matter of much controversy; the fact that we have so many fads in diet shows that the medical profession has not recognized the true value of this branch of medicine. The mention of vitamins and the allergic pro-

tein reactions suggests a few points. One is that the average individual is not correctly guided during childhood as to the proper diet. Dr. Brown mentions that it seems strange that we want to eat the things that will do us most harm and pass up those that do us good. Most children are spoiled and refuse part of the diet if the parent is not wise; most of us have examples in our own families where the vegetables, etc., are passed up for ice cream and pie.

Diet is a matter of national, as well as of individual custom, each differing from the other; the Japanese diet differs from the English and the English from the French. Vitamines are a matter of well balanced supply, with green vegetables to supply the vitamins and a diet that will furnish variety, which brings up the point that diet is an individual matter, in health and in disease. The doctor has taken up diet in health and has stressed the importance of guiding the child right and forming the habit of eating meat and potatoes and vegetables just as pie and cake. Diet in disease has gone through many changes and often the effect of diet has been observed long before the cause was known. Antiscorbutic diet was known for years before the reason for its effect was known, when the doctors used scraped fresh potato in treatment.

Regarding water during meals: this is not detrimental, except in one condition, and that is where you have a pale, undernourished child with a small stomach, who requires the full amount of food; if water is taken at the table, it will take up space that should be given to food; the stomach will hold only so much and a few glasses of water will fill the space, the appetite is satisfied and he does not get enough food.

DR. PHILIP KING BROWN, San Francisco, Cal.: After many years' service in a large hospital, handling a variety of medical conditions, have observed many things about diet, and cannot resist saying a few words. The most striking contribution to diet in the last year was Minot and Murphy's report on the feeding of red meat and liver in pernicious anemia. No condition has been more hopeless than pernicious anemia; we have only to look at the life history of Admiral Peary who was transfused thirty-three times, to see how hopeless. These authors reported last fall in the British Medical Journal, and afterwards in the Journal A. M. A., forty-seven cases of pernicious anemia, only one whom has died. On this diet of lean beef, beef heart and large quantities of liver every day, with a suitable supply of green vegetables, these cases go on living, though they do not recover. We have tried it in the Southern Pacific Hospital, with the same result, that we have no trouble handling pernicious anemia cases; they do not have these exacerbations of trouble on this diet. It is not iron and arsenic that these people need, but hemoglobin, and they get it on this diet.

A word about the Sippy diet in ulcer. No class of people are worse than railroad workers in eating; they eat irregularly and as fast as they can, neglect their teeth and do all the things that make for ulcer. We have histories of three or four hundred ulcer cases since I took over that service; I have refused to allow the Sippy diet, as I think it is one of the most pernicious things in medicine. I have never used it in my life. It is like giving opiates in appendicitis, where you relieve the pain and obscure the symptoms. If you give a man a means of relieving discomfort after eating, as simple as taking soda or magnesia, you simply invite him to go on in his pernicious habits of eating, when the easiest, simplest thing in the world is to put him on a decent diet, at rest, for thirty-six hours, and he will have no more pain, as a rule. If you have a case of ulcer that has pain on a modified Lenhart diet, which we have found successful, we have other diets. The Carrel diet is the basis of all diets that we use. I a man

on a decent bland diet, largely made up of milk and meat, has pain after forty-eight hours in bed, with ulcer, he has a complication; it is not his ulcer that is primarily at fault in producing that pain. The complications most often present are chronic appendicitis with pylorospasm, gall-bladder disease, or adhesions between the duodenum and gall-bladder.

Another point I want to mention is the use of the Carrel diet in simplifying the hospital diet. Every case in our service, if there is any question about the diagnosis, is put on the Carrel diet—four to eight ounces of skimmed milk at eight, twelve, four and eight o'clock. This is all the fluid he gets. We give it to all heart cases, because they should have as little burden as possible. You can slowly add to that diet by adding fruit juice, cooked green vegetables and, if high caloric value is needed, by using cereal with one of the meals; or we can add raw egg or soft cooked egg. I do not know anything that has reduced the question of diet to simpler terms than beginning with that system for practically all cases.

With regard to the Allen diet: I think his contribution to the treatment of diabetes by diet, estimating the caloric value and amount of available carbohydrate in the diet, is as important to the diabetic as insulin. I have tried the salt free diet in high tension cases and do not think it is followed by the results that Allen claims for it. It is easy to reduce blood pressure but not so easy to keep it down. Liver extract brings the high tension down but you cannot keep it there. We have abandoned the use of it because it is not of permanent value.

Am glad Dr. Brown spoke on this subject, because it is our business to learn about the variations in diet; it is exceedingly simple if you get down to fundamental facts.

DR. R. J. CALLANDER, Tucson, Ariz.: Would like to ask Dr. Brown (Philip K.) how he explains the relief of ulcer in forty hours by rest, if the pain is due to the effect of acid.

DR. P. K. BROWN, San Francisco, Calif.: Stopping pain by this diet is very simple. Milk is a bland food and does not stimulate the formation of acid; milk, therefore, minimizes the acidity and does it naturally instead of chemically, which, I think, is wrong. You can neutralize your acidity simply and naturally and normally in every case. Whenever the pain is persistent, it is evidence that you have something more than ulcer to deal with.

DR. R. J. STROUD, Tempe, Ariz.: With regard to habit in eating. Recently there has been a discussion in the Literary Digest as to why the Indians are a vanishing race. I have asked many of the Indian women why they are not so prolific as they used to be. These Indians, while not prolific as they trained, believe it is because of the new kinds of food they are using. Among the McDowell Indians, out of 58 families, there are 30 in the adult child-bearing period; there have been only eleven births in eleven years, and they do not know anything about birth control; none of these eleven children were healthy and three had congenital faults. Something has changed these Indians from being a prolific race. These Indians attempt to explain it by diet; I have tried to explain it by tuberculosis.

DR. ORVILLE H. BROWN, Phoenix (closing): The important point that I wanted to make is that we need to study this question more and do more toward teaching people about feeding children. It is important, in the early years, that they be given choice of vegetables; some of these put on the plate and child be told he must eat them. Wish to thank Dr. Philip Brown for entering into this discussion, because his points are important. The new ideas on diet, the use of liver, etc., are wonderful advances. There is much that we do not know about diet, it is true. The important thing is the habit, which is something very difficult to get.

THE USE OF THE CAUTERY IN THE TREATMENT OF CANCER

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(Read before the Thirty-sixth Annual Meeting of the Arizona State Medical Association, held in Yuma, Arizona, April 21 to 23, 1927.)

In the last few years much has been done by various organizations in enlightening and educating the general public on the cancer problem. More or less systematic campaigns have been carried on urging the early treatment or removal of points of chronic irritation and the examination of lumps of any kind. The result is that many more patients are coming to us while their lesions are still in the early stages, or with points of irritation which they have been told may lead to cancer. This propaganda will ultimately do a great deal of good and in those medical centers in which clinics are interested in this work something has already been accomplished.

Bloodgood, recently, in speaking of oral cancer, states that up to 1920 only three per cent of the lesions of the oral cavity for which patients consulted the Johns Hopkins Clinic, were benign; since 1920, sixty per cent of these lesions have been benign. Up to 1920 the percentage of early cancer cases which could be cured was three per cent; since 1920 this percentage has increased from three to almost seventy per cent in this same clinic. Before 1920, fifty-five to sixty per cent of the lesions were inoperable but since that time this figure has dropped to less than ten per cent. These figures show what can be done by education and, while Baltimore has been particularly active in this work, such results will eventually become general. At the present time, in the outlying districts and even in the cities, the general man who is usually the first to see these patients is not, as a rule, equipped to take care of these apparently minor lesions and passes them off with the assurance that no difficulty will result.

While a great deal of work has been done in the study and grading of malignant conditions, our knowledge of the etiology is not all that we might wish and our work must be based on facts derived from clinical observation. These facts are as follows:

1. Points of chronic irritation involving epithelial structures often lead to cancer.
2. Cancer starts at a single point and develops from that area.
3. Cancer untreated usually kills its host.

From the foregoing it would seem most necessary that the men in general practice

and those in specialties become interested in and prepare themselves for the treatment of precancerous and early lesions. A disregard of the complaints of these patients often furnishes just enough assurance of safety to carry them from the operable to the inoperable stage before again consulting their first, or another physician.

If both the profession and the laity can be impressed with the importance of treating the irritated conditions early and radically, we will see fewer of the advanced and distressing lesions which require disfiguring and mutilating operations. Any physician who has the opportunity of visiting the charity institutions and seeing the inoperable cases, whose suffering can be only partially relieved while they wait the end, will appreciate this statement more than will the man immersed in his private work. The fact that all advanced lesions have developed from a small mass, a keratosis, a small ulcer, a leucoplakia, or a mole, makes this terminal lesion seem most unjustifiable and the result of negligence on the part of either the patient or a former physician. I often think that barbers and attendants in beauty parlors understand the situation better than most of us. Although they know nothing of treatment and often, by their efforts, stimulate a benign lesion so that it becomes malignant, they nevertheless recognize the potentialities and suggest or try to do something for their clients.

There are several recognized methods of treating these conditions and all are more or less satisfactory. Not all are available in every locality, however, and, if general results are to be obtained, a method should be adopted which can be applied in the country as well as in the city.

The x-ray, radium and diathermy are of value in the treatment of these conditions but the cost of equipment and the fact that more or less specialized knowledge is necessary for their use, make them prohibitive in many instances. In the rural districts specialists are frequently not available and it is the general practitioner who sees these patients first, and he should be able to care for them when they present themselves. Furthermore, a patient occasionally loses contact with both physicians when he is referred from one office to another.

The use of the actual cautery in the treatment of precancerous and early lesions is well recognized the world over and gives most satisfactory results. Any one of the light types of cautery may be used. They are inexpensive and so can be obtained by any one; their use is not complicated and,

with an understanding of what is to be accomplished, require only the simplest knowledge of surgery.

All external precancerous and actively malignant lesions may be treated by this method which permits the operator to work in or close to the involved area and gives the greatest assurance of a clean result, with a minimum of scar.

With the cautery, general anesthesia is not required in these early lesions. Novocain, $\frac{1}{2}$ to 1 per cent, used as nerve block or injected around the involved area, is simple and gives a satisfactory anesthesia. Great care should be taken not to pass the needle through or into pathological tissue. This precaution is of the utmost importance and failure to observe it may carry malignant cells into normal tissue beyond the area of possible removal. The following case reported emphasizes this point.

The patient, a female, age 62, was operated for carcinoma of the lower lip six months before I saw her. The usual V-shaped incision was used, followed in ten days by a submental and submaxillary dissection. When I first saw the patient a small painful nodule was present at the lower end of the incision but this nodule was not characteristic of a recurrence. With a novocain block of the mental foramen, directing the needle to a point which I thought was well below the involved tissue, I removed the nodule with the actual cautery and had radium applied. The patient went home but in three months returned complaining of severe pain in the lower jaw. A small mass was present in the region of the mental foramen. Under general anesthesia this was explored with the cautery. The nodule was found protruding from the mental foramen. The buccal plate of the mandible was removed and the entire neural canal was found to be eroded and involved to the angle. This was cauterized and later removed. I cite this report to illustrate what I believe to be an extension of the malignant process resulting from the use of the hypodermic needle.

After anesthesia is induced, the lesion may be attacked in one of two ways:

1. By infiltrating the involved area with heat. This is done by applying the cautery over the entire surface, holding it in one place until the heat has penetrated through the base, and then moving the tip to the adjoining area, repeating this process until the entire lesion has been completely devitalized. It is not necessary to apply the cautery to the normal surrounding tissues as these can be infiltrated from the growth which, when sufficiently heated, will contract, leaving the normal border white, which assumes the color of a third degree burn.

2. Should the area be larger than one centimeter, it is better, I believe, to excise it with the cautery. This is done by encircling the growth, carrying the incision about 3 mm. outside the visible area of in-

volvement and removing the entire mass at the base well into the normal tissue. This incision is made by following the Percy method of penetrating the normal tissue external to the growth and carrying the incision completely around, cutting from within outward. You will note that this procedure is the direct opposite of that employed in incisions made with the scalpel. This manner of using the cautery lessens the destruction of normal epithelium. These wounds do not bleed when sufficient time is taken to coagulate the tissue and they are surprisingly painless.

In treating the more extensive and advanced lesions, two factors must be recognized: first, the entire area must be removed or destroyed, and second, every precaution must be taken during the procedure to prevent the transplantation of malignant cells. As yet the effect of the x-ray or radium in a given lesion is an unknown factor. In one case their effect is almost magical, while in another apparently similar case, they are inert. Then, too, we have no assurance that a lesion treated by radioactivity will not recur and the majority of such recurrences will not again react to these agents.

Cold surgery necessitates a wide area of removal resulting in unnecessary scarring and, should the growth be opened or cut into, a wound ideal for the reception of malignant grafts is given. The cautery, when used to infiltrate, is under control of the operator and he may do as much or as little as he desires. Any mass can be actually destroyed if the operator has the courage. In the removal or excision of a growth, any cells exposed in the malignant mass are destroyed and the base of the wound contains only devitalized cells which must be cast off before any kind of a graft can take—a process which usually requires three weeks. This fact alone makes the cautery more effective than any other method.

The treatment of advanced lesions requires more extensive procedures which are technically more difficult. The type of cautery used on the larger growth is important and may be the determining factor in the results obtained. For example, the removal of a breast or a large mass with the smaller cauteries is a tedious and difficult process. The heating elements are not large enough to keep the tips hot and the tips are not strong enough to withstand the pressure which is required when insufficient heat is present; they often bend or break. The Percy cautery is by all means the best for this type of work. On the other hand, growths around the mouth or eyes can be

well handled by the smaller instruments as the tissue is cellular and cuts easily.

The temperature of the tip of the cautery is important. Although Scott recommends the use of red heat, I have found Percy's technic the most satisfactory. By Percy's method, the tip is energized to a black heat of sufficient degree to cut easily and still be under the point of carbonization. Carbon on the cutting tip acts as an insulator and materially reduces the speed and efficiency of the instrument. When the proper heat is attained, very little pressure is required to penetrate even the heaviest type of tissue.

As for the type of anesthetic employed, ether may be used except for removing lesions on the head and face; in these cases we induce anesthesia with ether and shift to chloroform before starting the operation. Under no circumstances do we use ethylene when the cautery is employed.

As stated above, these wounds do not bleed when the tissue has been properly heated. Should small blood vessels ooze, they may be coagulated by the tip; only large vessels have to be ligated. In one case we removed the tonsil, soft palate and about one-quarter of the posterior portion of the tongue without a ligature and without bleeding. Another case presented a tremendous growth which had originated in the external ear, spreading to the side of the face and head until it had assumed the size and shape of one-half of a cabbage; it was very vascular, ulcerated and friable in texture. Before starting removal, the surface was coagulated but each time the mass was touched with the large tip the coagulated tissue separated from the growth and a stream of blood followed. Four or five such attempts resulted in a very considerable flow of blood which showed no tendency to stop. Resection of the tumor in the normal border was started and the entire mass removed from a dry base. This process required two ligatures, one on the superficial temporal artery and the other on the posterior auricular artery. In one case with an advanced growth of the cheek infiltrating the antrum, the entire cheek, zygoma and masseter muscle were removed and the antrum completely cauterized with no bleeding. Two ligatures were used, one on the facial artery and the other on the transverse facial artery.

Large growths may be removed with comparative ease since the field is dry and the visibility excellent. The removal of the breast and axillary dissection is much easier with the cautery than by the classical method. Large carcinomata of the head and face

involving the antrum, tonsils and tongue are amenable to treatment with the cautery. When the base of the growth cannot be removed entirely, it may be infiltrated with heat and allowed to slough. This combined method often gives remarkable results. In any lesion the glands draining the area should be removed and the cautery used if there is any evidence of existing metastases.

I wish to urge the importance of a careful search for regional and distant metastases in patients with known malignancy, before attacking the local lesion. This precaution we owe to ourselves as well as to the patient for it is most discouraging to have a lung, bone, or liver metastasis become evident two or three months after a "successful" operation has been performed on the primary growth. Failure to make such a search has done much to lessen public opinion of our ability to treat this condition successfully. A year ago I saw an elderly man with an advanced lesion on the lower lip which involved the periosteum of the mandible and was ulcerated on the inside. He appeared to be in good general condition and gave no history of any other trouble. General examination was negative except for an enlargement of the submental and submaxillary glands; the cervical glands were not palpable. The lower lip and submaxillary glands were removed at one time. Five days later the patient vomited and purged blood and an x-ray examination disclosed an advanced carcinoma of the pylorus. This was also the terminal lesion of the first case reported in this paper; this patient died from a huge carcinoma of the pylorus 18 months after her first operation. I am of the opinion that these stomach growths were secondary to the mouth lesions, the result of fragmented cells which had been swallowed and had engrafted in the region of the valve.

CONCLUSIONS

1. All physicians in active practice should become interested in and be prepared to treat properly, precancerous and early malignant lesions.

2. The cautery is within the reach of all and its use offers more satisfactory results than any other method of treatment at our command.

3. The use of the cautery reduces materially the possibility of a local recurrence.

4. A careful examination for superficial and deep metastases should be made before attacking the local growth.

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DISCUSSION

DR. CHARLES A. THOMAS, Tucson, Ariz., (opening): I appreciate the privilege of discussing this paper because it is most timely and of a great deal of value. Personally, I would not attempt to practice surgery without the cautery. It is the greatest instrument that the man who does a large amount of minor surgery can possibly have around his office. I want to mention the value of education of our patients on the subject of cancer; we should call their attention to the fact that one woman out of every five over the age of forty, dies of cancer. Therefore, when I am examining patients routinely in the office, I always look in the mouth for teeth that cut the tongue or mucous membrane and other irritating areas about the mouth, point them out and stress their significance. Teach them to become familiar with the breasts, to go over them once a week and see whether any nodules have developed; if so, to see their physician and have them removed. Only by this means are we able to save a large percentage of these cancers of the breast. The doctor did not mention the value of the cautery in the correction of ulcerations and erosions of the cervix; we always tell our patients about the possibility of these ulcerations developing into malignancies. Nothing is so valuable, so clean and so certain as the cautery used on these lesions. Use a low degree of heat and cauterize them as if you knew they were malignant to start with; destroy all the glands; at that age they are of no value and simply represent possible foci of cancer. In anesthetizing, never put local anesthesia into the local lesion; go around it and block it off far away from the lesion. In many of the minor lesions, you do not need anesthesia at all. I have seen Dr. Percy take off quite large areas without using local anesthesia at all; that is asking much of the patient but it can be done. One further word: after removing breasts or large malignancies, always be prepared at the end of two or three weeks for a hemorrhage. Have had some alarming hemorrhages following some of these large dissections. Wish to emphasize again that the doctor's paper is the most valuable thing that could possibly have been presented to us.

DR. A. E. GALLANT, Los Angeles, Calif.: Would like to ask what experience the doctor has had in bone growths; also as regards the education of the patient with respect of the cautery. Had occasion to see a young boy with periosteal sarcoma of the leg, not very large; we did not get all the cancer tissue and had to amputate the leg; it is now eighteen months and believe we have a cure. With regard to the slough and hemorrhage. Dr. Percy had a lot of grief with his patients from using Carrel-Dakin solution; investigation showed that the chlorine was dissolving the blood clot out of the end of the arteries. He conceived the idea of using sugar and found that the action of the sugar prevented sloughing and hemorrhage; also, sugar killed the odor from the mass of sloughs, which was a good thing for the surroundings of the patient.

DR. W. WARNER WATKINS, Phoenix, Ariz.: Should like to ask the doctor's opinion as to the comparative value of the Percy cautery and electro-coagulation, on the lesions of which he has spoken.

DR. CLARENCE REES, San Diego, Calif. (closing): The one thing I wanted to bring out in this paper is that it is useless to educate the public if we, as a profession, are not going to think in unison. In our locality, it is surprising how many people have consulted physicians and been told that

their head lesions are of no importance. In the large services and charity institutes, where we see end results—because it is there that the end results apply—we realize that it is the general man who needs education. About two months ago I had an experience of this kind. A man came from Riverside to see what could be done. He had had a pigmented mole on the back for years; it started to grow and he consulted a very good man in Riverside, who referred him to a very good radiologist, who treated it with x-ray. Inside of three months, the primary growth ulcerated and he had nodules all over him, varying in size from a pea to end of the thumb, and involvement throughout. The point is that a scar in the lumbar region does not amount to anything, so why not have it taken out? He carried this mole all this time, until it began to enlarge; it may have metastasized before he had treatment; however, there was no excuse for not removing it.

In regard to Dr. Thomas's point about having the patients examine the breasts: I do not exactly agree, because it is a bad thing to get patients apprehensive over things that MAY occur. Patients who trouble us most are those who are apprehensive over a little mastitis, feeling the breasts for this and that. They should be warned about definite symptoms.

In regard to using the cautery without anesthesia: Dr. Percy's using vocal anesthesia on these patients—talking them out of it—may get them into a mental state where it does not hurt much, but why not use local anesthesia?

I have had no experience with bone growths.

As to electro-coagulation: on the superficial growths it works exactly as well as the cautery, but not every one can have an electro-coagulation outfit.

THE LOW TRANSPERITONEAL CESAREAN SECTION

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Read before the Thirty-sixth Annual Meeting of the Arizona State Medical Association, held in Yuma, April 21 to 23, 1927.

The introduction of the low transperitoneal cesarean section has increased the safety of abdominal delivery. Stoeckel, director of the Women's Clinic of the University of Berlin, recently referred to this operation as the modern section, which comes off easily, and in a manner almost totally free from danger for the mother; and he added that an artificial delivery more sparing for the mother and safe for the child does not exist. It is a reliable operation at a time and under conditions when the classical section has become so risky as to be prohibitive: after a prolonged test of labor, after vaginal examinations, and after rupture of the "bag of waters." On the other hand, its points of superiority make it preferable to the classical section in those cases where delivery before the onset of labor is necessary.

Its introduction has increased the safety of abdominal delivery immediately, because it has reduced the risk of peritonitis, and remotely, because it has reduced the risk

of rupture of the uterus in subsequent deliveries.

The minimization of peritonitis as a morbid and fatal complication is due partly to the location of the incision in the lower zone of the uterus, since, in a few hours after operation, it becomes a pelvic wound. Hofbauer² has shown, to the satisfaction of Dr. Williams, that the cellular tissue about the cervix possesses certain protective features that enable the pelvic structures to bear injury and infection. The important element, however, is the covering of the wound by peritoneal flaps. This procedure immediately seals the uterine wound, and so prevents infectious lochia from leaking into the peritoneal cavity. Authorities believe that it is not so much the spill at the time of operation as it is the lochia escaping through the uterine wound, that is the underlying factor in infection.

There are several factors making for a safer scar. Chief among these is the presence of the strong fascial layer which covers the musculature of the lower uterine segment. It is true that there is authority for believing in the reasonable safety of the scar in the high operation. Williams³ states that a well-sutured wound followed by an afebrile puerperium leaves a strong scar which will be safe in future pregnancies and labors. Nevertheless, Newell⁴ states that four per cent of previous sections of the uterus by the classical method rupture either before or during labor. Hillis⁵, in 1925, reported four cases of ruptured uteri following classical section; these cases were brought to Cook County Hospital in extremis, the rupture having occurred before the onset of labor. Several cases of ruptured uteri after a high section, have been operated upon at the Los Angeles General Hospital during the last two years. Last March there was a case of rupture in the fifth month of gestation; the patient, who was under observation in the obstetrical ward at the time, had undergone two previous classical sections. Holland⁶ published, a few years ago, a collection, as complete as he could make it, of pregnancies after classical cesarean in England, with the incident of rupture. He reported one rupture for every four spontaneous deliveries following classical section. Rupture of the scar is generally recognized as a real danger by German writers. Steinberg⁷, assistant in the private clinic of Dr. Samuel of Cologne, mentions the collection made from literature by E. Schroeder in 1916, in which he sets forth a total of sixty-two ruptures of pregnant uteri after previous cesarean section. (To

be sure, twenty-five of these were transverse fundal sections, and only twenty-eight were known to be classical.) This collection apparently covers a period of twenty years; since the first recorded rupture after the appearance of the modern cesarean as introduced by Saenger in 1882, was in 1895—reported by Koblanck.

It is early to make positive assertions about the low operation in this regard. As Steinberg says, in the same article, further experience must show whether the promise of Baisch—that the scar of the lower operation will heal better—will be fulfilled. Steinberg goes on to say, however, "As far as we can judge from present statistics, it seems to offer greater safety," and he affirms that the regeneration of tissue seems to be better than in the body of the uterus. The general feeling in Central Europe and France seems to be that the result of the adoption of the low cesarean is being shown to be a marked lowering of the incident of rupture. Hammerschlag⁸ reports a case to the Obstetrical and Gynecological Society of Berlin, where the dependability of a low scar was shown by its perfect resistance in a case of transverse arrest. Brindeau⁹ says that, after the transperitoneal section, rupture of the scar is almost never met.

It would be difficult to offer the solid foundation of statistics, but fortunately Wetterwald has set himself to gathering the facts as completely as possible. He has collected from the literature of the world 3600 cases of low transperitoneal section. He has been able to find ten cases of rupture, an addition of four to the six already collected by Schroeder in 1916. Realizing that these figures give no clue to the percentage of rupture, since it is impossible to know how many of these sections were followed by spontaneous deliveries, Wetterwald¹⁰ has compiled a report from the 200 transperitoneal sections performed during the last ten years at the Canton Hospital of St. Gall, Switzerland—Dr. Paul Jung, chief. There were forty subsequent deliveries per *vias naturales* (of which thirty-four fulfilled the Sellheim requirement of being entirely spontaneous), with one rupture. H. Huber¹¹ reported, in 1924, twenty-eight subsequent deliveries per *vias naturales* from the two Walthard clinics, without any rupture, together with twenty-three repeated transperitoneals. He says of the latter, "In the majority of cases the scar was practically invisible."

In addition to the reduction of these two grave risks, there are other advantages to commend the operation to surgeons. The peritoneal adhesions to be found in almost

fifty per cent of the classical sections, are practically absent. The immediate post-operative gastric and intestinal disturbances are reduced to a minimum, as the intestines are rarely seen and therefore, rarely traumatized. Post-operative shock is remarkably absent; this, too, is due to lessened traumatization of the peritoneal cavity. The immediate hemorrhage is less, because the lower zone is less vascular than the upper zone—the musculature is thinner and it is, accordingly, easier to control the spurting sinuses with pressure at the edge of the incision. Placenta previa is handled with ease, because the uterine incision is over the site of bleeding.

The introduction of the local infiltration anesthesia has reduced the pulmonary complications which were incident to the ether anesthesia. In De Lee's¹² clinic the morbidity has been reduced from forty plus to twenty per cent since the introduction of local anesthesia.

The anesthesia is, however, a matter of choice. De Lee¹² has adopted the local infiltration method; he infiltrates each layer as encountered, using one-half of one per cent novocain. The success of this method is confirmed by the reports that have appeared from De Lee and his associates. The author, since his return from the clinic, has performed all sections except two under the local method. These two were performed in a hospital where an expert in ethylene is employed, and the author is frank to state that the post-operative convalescence compared very favorably with that of the others. Regardless of anesthesia, the technic of the operation is essentially the same, and the same careful dissection and handling of tissue should be observed whether the patient is awake or asleep.

The patient is prepared as for any laparotomy. The preparation of the lower abdomen must be carried to the upper end of the vulvar crease. The patient must be catheterized before the operation, and the catheter clamped and left in place. The abdomen is opened in the mid-line; the incision should extend from the upper border of the symphysis pubis upward from twelve to fourteen centimeters.

After the abdomen is opened, the edge of the parietal peritoneum is sutured to the edge of the subcutaneous fascia at four points: at the upper and lower angles, and in the middle of the incision on each side.

The lower segment will now be exposed. The upper limit is marked by a slight folding of the peritoneum, which gives the ap-

pearance of a transverse seam, and which De Lee has named the gray seam. This marks the point of the contraction ring, and its location in reference to the exposing wound depends on the length of the lower segment. The longer the parturient has been in labor, and the more dilatation has progressed, the greater is the length of the lower segment.

Above the gray seam the upper or contractile portion, the body of the uterus, appears, reddish in color, and with the visceral peritoneum so firmly attached that no amount of endeavor can strip it off. There is no fascial layer.

Below the contraction ring, or gray seam, is the lower zone, or the so-called lower uterine segment. The peritoneum is loosely attached, and may be picked up in folds like the skin of a cat. The fascia is well-developed, and, as it covers the uterine muscle, it gives a grayish-white appearance to the lower zone. The peritoneum, traced downward, is reflected over the bladder at the utero-vesical fold. The distance between these two points is about six to ten centimeters.

The peritoneum over the lower uterine segment is now incised transversely about three or four centimeters below the gray seam. This transverse incision is carried laterally on each side about six centimeters. Care must be taken that the incision is not deep enough to encounter the fascial layer, as the line of cleavage is above this layer in the sub-peritoneal tissue. If the fascial layer is disturbed, bleeding will be profuse, and technical difficulties will be created.

The two flaps are now made. The lower is dissected downward by the point of the finger, and, with the flap of the bladder, is dissected from its uterine attachment. The upper flap is made in the same manner, except that greater care must be exercised, as the flap becomes very adherent at the gray seam and consequently may be "buttonholed." The tip of the lower flap is sutured temporarily to the lower angles of the incision. This step prevents injury during the extraction of the fetus.

The lower segment is now exposed, and the uterus is ready for incision. Two Allis forceps are applied to the upper and lower end of the limits of the contemplated incision. The lower forceps are well down behind the posterior surface of the symphysis; the upper are about one centimeter below the contraction ring. The length of the uterine incision is about ten to twelve centimeters long.

The uterus is punctured at the top of the contemplated incision. If the "bag of

waters" is still intact, it is ruptured, and the spill is cared for by a suction pump. After the uterus has been drained, it is incised by one of two methods: either by slipping a modified tonsil knife through the incision, bringing the point out below, and then, by a sawing motion, opening the uterus the required length, or, better, by cutting with bandage scissors. Should bleeding from the edge of the wound become troublesome, the assistant should grasp the edge of the wound with Allis forceps spaced about two centimeters apart, removing them before the baby is delivered.

The delivery of the child follows. The face is sought for with the hand, and the finger is inserted into the baby's mouth. The face is then rotated into the wound, so that it is the presenting part. The assistant then replaces the operator's finger with his own, and steadies the head while the operator applies a pair of obstetrical forceps. De Lee has modified a pair of Simpson forceps by exaggerating the cephalic curve so that a better grasp of the head can be secured. When the infiltration method is being used, the occiput may be rotated into the wound, in the case of occiput anterior positions. The forceps are then applied in the same manner as when used to deliver the head from below.

Pituitrin is given as soon as the child has been delivered.

While the assistant is clamping the cord, the surgeon grasps the edges of the uterine wound with Allis forceps, peeling the membranes back from the edge as each forcep is placed. This step prevents bleeding from the sinuses in the wound.

The placenta, if not expelled spontaneously within five minutes, may be removed manually. The uterus is sponged out several times, and then packed with about four yards of gauze about two inches wide and several layers thick. The packing minimizes the bleeding from the fundus. The free end of the gauze is now sutured to a metal shuttle which is pushed through the cervix into the vagina, carrying the gauze with it.

The uterus is now ready for closure. Number two chromic gut is used to make a continuous suture down to, but not through, the mucosa. As the suture is placed, the Allis forceps are removed. The wound should be kept free of blood during the suturing. The next layer may be either interrupted or continuous. The third and last layer approximates the fascia. This suturing is the most important step, and is stressed by De Lee, as it unites that im-

portant structure, the fascia, which we believe renders the lower segment practically rupture-proof.

After the uterus is closed, particular attention is given to the denuded area over which the peritoneal flaps are to be sutured. Hemostasis must be absolute, as any bleeding here will lead to the formation of hematomata under the bladder, with subsequent infection and suppuration.

The lower flap is now sutured to the upper with plain gut. The parts are now restored to their original anatomical relation.

Should an indication for hysterectomy appear, the lower flap may be used to cover the stump of the cervix.

Post-operative treatment cannot be discussed here, except to say that the uterine tamponade is removed about eight hours after the operation. The catheter is removed at once, and the color of the urine is noted. If it is clear, it is concluded that no bladder injury has occurred.

The time required for this operation is somewhat more than that for a classical section; but this is in no way a valid objection to the procedure.

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DISCUSSION

DR. JOSEPH M. GREER, Mesa, Ariz. (opening): Over a period of twenty years I have been doing the classical cesarian operation. In my last fifty-seven cases I have used the operation just described to you, with no material mortality and no fetal mortality.

How does that sound?

I wish I could make some such statement, but, as a matter of fact, I have not practiced twenty years, and my last fifty-seven cases have not yet been done. I must confess that I have not done this operation at all, so you will see that I am entirely incompetent to discuss this paper. I might use the time in praising this very praiseworthy paper, extending congratulations and in expression of appreciation of the privilege of having heard it. Having admitted my unworthiness, if time is still allowed me, I will outline a few of the shortcomings of the classical cesarian operation and some of the advantages to be

gained from the procedure described, which is the operation of the future. De Lee once said that 'we are quite satisfied with a mortality of two per cent', but there was a desire on the part of the profession for something better and that may be the reason that this operation, which is very logical, was originated. The shortcomings of the original operation are shock, hemorrhage, late peritonitis, and rupture in subsequent pregnancies. Many attempts have been made to overcome this peritonitis, which spreads from the uterus at the time of the operation by leakage through the lacerated tissues. Since sepsis is a relative affair and there is always some infection a short time after delivery, it is easily understood how there is leakage and peritonitis. Where the wound in the uterus is not very tight, we may have rupture. Many things have been done to obviate this, from suturing the uterus to the abdominal wall to removal of the uterus, etc. There are many advantages to the low cesarian section which appeal to us: (1) incision in the part of the peritoneal cavity which is most resistant to bacterial invasion; (2) no adhesions and elimination of intestinal obstruction, which is one of the disadvantages of the classical operation; (3) cervical area stands infection better; (4) as stated, there is less hemorrhage and shock and a less stormy convalescence; (5) suture of the cervical wound is easier, on account of its location and difference in tissue; (6) the peritoneum is denser and much more easily handled; (7) healing of the wound is better; as Dr. Smith says, "splinting the abdomen" is accomplished by the anatomical location of the wound; it is not in the fundus where it is wabbling all around. The test of labor may be given in these cases; after the stormy convalescence of the classical operation, the woman hesitates about further pregnancies; but after one of these operations she does not hesitate so much. Not so many cesarian sections will be done, because the test of labor can be given, and many will deliver without cesarian; then if we do have to perform the cesarian the danger line will be pushed back, because of these various advantages.

DR. A. J. McINTYRE, Phoenix, Ariz.: It is a well-known fact that infection in the peritoneal cavity can be pretty well taken care of, if the source is removed. For eight or ten days after emptying the uterus there is a constant contraction and relaxation of the muscular fibres, so that there is a constant drag and pull on the sutures, and any suture will rupture more or less; even silver wire sutures have been known to rupture in the muscle of the uterus after cesarian. Since the uterus, during that first one or two weeks may be anywhere in the abdominal cavity, under the liver or deep in the pelvis, constant excretion is taking place through the uterine wall and disseminating infection through the peritoneum. If the incision can be made low down and the area kept entirely outside the peritoneum, it does not matter how much infection takes place. If we should have an accident in delivery and the head should tear through the external os, it does not make any great difference, as the infection will be outside the peritoneum. If abscess forms, it can easily be drained by puncture through the anterior culdesac, or through the space of Retzius, keeping the infection from the abdominal cavity. I think Dr. Pierce told me there have been no instances of rupture in this country following this operation, although about ten have been reported from abroad. One of the chief points should be kept in mind—to carry the incision low enough down against the pubic bone; every half inch in this space makes a great difference.

I wish to thank Dr. Pierce for bringing this most excellent paper and giving us a chance to profit from his experience.

DR. R. D. KENNEDY, Globe, Ariz.: Four years ago I visited Pollak's clinic and saw the pathological

specimen from a woman who had died of septicemia after cesarian section. The interesting thing was that the specimen showed the anterior wall of the uterus around the incision had sloughed but the peritoneal suturing had prevented the infection from extending into the peritoneal cavity, and the patient had no peritonitis. It was very strong evidence to me that this operation has great value, if for no other reason than that. In our small communities we do not have many of these cases, and the question of infection is of great importance; we do not know how many times they have been examined or how carefully, so this operation is much safer than the classical cesarian in these cases. I also saw Pollak using iodoform gauze; we know iodoform is an inhibitor of colon bacillus infection and, as many of these cases have slight colon bacillus infection, there is some advantage in iodoform gauze.

DR. A. C. CARLSON, Jerome, Ariz.: Dr. Pierce places the patient in the Trendelenburg position; it is a slow operation, and I am wondering as to the degree of discomfort to the patient in that position for so long a time.

DR. C. A. THOMAS, Tucson, Ariz.: I am glad the doctor brought this paper; it is most instructive and I wish to thank him. I am glad we are getting fool-proof operations for cesarian section, because there are more fools doing cesarian section than any other operation I know of; men without the slightest experience will undertake to do the cesarian operation. It is too serious a thing for me to do lightly. At the larger clinics where the cases repeat, if the history shows temperature during the puerperium, they are slated for a repetition of their former operation; where they do not know, they take no chances, but take it for granted that the patient did have temperature before and is, therefore, more liable to rupture the uterus in the following operation. This paper gives us a new idea and a much safer operation.

DR. C. E. IRWIN, Miami, Ariz.: I should like to have Dr. Pierce compare the value of local infiltration as against spinal or sacral anesthesia in these cases.

DR. CHARLES S. VIVIAN, Phoenix, Ariz.: I should like to have it go on record at this time, that my associate, Dr. E. Payne Palmer of Phoenix, has performed three of these low cesarian sections and I presume he is the first to do it in Arizona.

DR. STERLING N. PIERCE, Los Angeles, (closing): In regard to the Trendelenburg position: some men put the patient right down, but it is not necessary, particularly in local anesthesia; it is a modified Trendelenburg. As to the anesthesia: the Germans work a lot under spinal. I reviewed thirty papers in French and German, and many of their operations were done under spinal. We have not attempted that in the Los Angeles General, because we got into the papers once or twice. We had one under spinal and the blood pressure fell way down, which the chief of the service said was due to the spinal. There are doubtless indications and places for it. Dr. Thomas spoke of desiring a fool-proof operation; this is nearly that in the hands of competent surgeons. Pollak's case mentioned was what led him to investigate this low cesarian operation. With regard to bladder tears: there were none in his series, but one of my associates in Los Angeles who works with me tore the bladder in one of his operations. If you get a bladder tear, sew it up; they get on all right. I wish to thank Dr. Vivian and members of the Association for this meeting and the privilege of appearing before you.

LUPUS VULGARIS

REPORT OF CASE ORIGINATING IN ARIZONA
WITH PRESENTATION OF PATIENT

NELSON D. BRAYTON, M. D.

Miami, Arizona.

Read before the Thirty-sixth Annual Meeting of the Arizona State Medical Association, held in Yuma, Arizona, April 21 to 23, 1927.

Lupus vulgaris may be defined as a pathologic process destructive to the skin and mucous membranes, and which manifests itself in the production of cutaneous lesions which, by resorption, metamorphosis or ulceration, may be productive of atrophy, scarring or grave local injury, or, in some cases, be the point of origin of generalized tuberculosis.

Historically, it is one of the oldest and, when fully developed, one of the best recognized of skin afflictions. The literature of dermatology abounds in descriptions and pictures of this malady and a prominence far beyond its frequency (three cases in a thousand) is accorded it on account of the spectacular character of its multiform lesions, its obstinate chronicity, its rebelliousness to treatment, and its speculative etiology. It enmeshes in its history the name of every dermatologist from Hutchinson of London, the all-time dramatist of skin diseases; from Kaposi of Vienna, who first exploited its manifold cutaneous explosions; from Unna of Hamburg, who next exploited its pathological manifestations, down to those of our present day scientists who are still attempting the establishment of its absolutely definite mechanical causation.

SYMPTOMATOLOGY

The most common site for the manifestation of this malady is the face, especially the region of the nose. Other surfaces may be invaded, either conjointly or independently. The disease generally begins with the development of several pin-head to small pea-sized deep seated brownish-red or yellowish macules (these may simulate in color and distribution lupus erythematosus), or the small discrete infiltrations of tubercles, which always have their origin in the corium and are softer and looser than normal tissue. Slowly and insidiously the disease progresses; new lesions appear at bordering or neighboring and dissociated parts. Thus a patch is formed composed of the crowded aggregated tubercles. These earlier nodules, or infiltrated points, having attained a certain size, generally the size of a small pea, they remain stationary for a time, at least, and then, sooner or later exhibit their retrogressive characteristics of resorption, disintegration, destruction, and ulceration

with scarring, pigmentation or atrophy. The length of time required for this process varies. It requires more time than syphilis or carcinoma in its evolution, and, in more ways than one, resembles the metamorphosis of *lepra anaesthetica*. Its span of life may engage the attention of its owner for a quarter of a century and, in all that period, exhibit slight though constant activity.

Crust formation may occur within the boundaries of the formation and later, as the patch increases in size, cicatricial tissue forms in the center. The patches may spread by the appearance of new papules or tubercles at the peripheral portion and often by entirely new and dissociated islets lying entirely outside the borders.

In the completely developed cases of lupus, the ulcerative tendency is always observed. The involution of the lupoma is accompanied with typical apple-butter colored appearance in the more recent papules and tubercles; later, crusting occurs and the metamorphosis of the lupus patches furnishes scales, whitish, dirty, yellowish-brown, or glistening, and cicatrizing tissue. Ulcers, with pus formation, may occur and the accompanying tissue destruction be very considerable and disfiguring; even the loss of an ear or nose may occur.

So the disease continues, distinguishing itself with remarkable indolence and chronicity. Nodules may remain for months or years without increasing in size or undergoing regressive changes. Ultimately retrogressive changes do occur. When the patches are small and circumscribed, the prognosis is favorable. When they are extensive, they may be incurable. The prognosis depends upon the age of the patient, the resistance of the individual, the extent, form and duration of the disease.

PATHOLOGY

The pathologic histology of lupus vulgaris is, in the main, that of any infectious granulomata. The giant-cells, with their peripherally arranged nuclei, are ever present. They are found deep in the corium surrounded with epithelial cells and profusely mixed with small round cells enmeshed with enlarged capillaries and lymph-channels. These form the lupoid papule and, as it enlarges, it stretches the epithelium above and there supervenes the distinctive "apple-jelly" colorization and the characteristic nodule. No one feature of lupoid pathology is pathognomonic except the finding of the tubercle bacillus, always rare and laboriously difficult of discovery.

The next stage of the history of the lupus nodules is the degeneration of the new-

ly formed cells and their surrounding fibrous tissue. Center cells, being oldest, are first affected, their protoplasm becoming homogenous, and characterized by tinctorial changes (a lessened affinity for basic dyes) in the affected elements. The necrotic degeneration, on account of lessened toxic influence due to the very small numbers of tubercle bacilli, is a matter of slow progression. When the lesion finally reaches the epidermis and breaks through, secondary infection, generally staphylococcic, occurs with accompanying production of pus tissues, scales, scabs and crusts.

Further, depending upon the severity of these pathologic reactions, we have the different varieties of the disease such as lupus sclerosus, lupus hypertrophicus, lupus verrucosus, lupus papillomatosis, lupus exfoliatus, or lupus serpinosus. Also, there may be a rare form of lupus vulgaris, sclerosus erythematosus, which closely resembles and simulates lupus erythematosus, and which the patient exhibited here today closely simulated in the early stage of her disease.

Mention should be made that, by some dermatologists, lupus has been considered a reflex dermatologic neurosis due to a toxin (probably tubercular) generated as the causative agent in some remote part of the body.

DIAGNOSIS

The diseases most apt to be confounded with lupus vulgaris are tubercular syphilis, lupus erythematosus, epithelioma and leprosy. The first-named disease may often closely simulate lupus. Its differentiation rests in the history of a rapid course of the disease; the concomitant signs of syphilis; the firm ulcers; the Wassermann and therapeutic tests. Epithelioma begins later in life and its ulcerative process is always attended with central ulceration which is surrounded with the hard, raised, pearly, waxy border. Leprosy presents a more generalized eruption, usually with the anesthesias, and bacteriologic tests will show myriads of the leprose bacilli.

TREATMENT

Treatment is both general and local. A rational treatment would keep in view at all times a supervision of the patient's general health, together with local measures having as their objective the destruction or removal of the diseased tissue. Hygienic measures, such as nutritious diet, fresh air, exercise, and the ordinary anti-tubercular regimen, should be employed by the medical counselor. Tuberculin, tonics of cod-liver oil, or iron cacodylate, should engage the attention of the physician in the severe

cases associated with active tubercular reactions. Locally, heliotherapy should receive primary consideration. The application of direct sunlight is of primary importance. Not only should sunlight be used upon the diseased area but body baths should be given after the manner of Rollier of Switzerland, or as Watson and others of our Arizona profession are so admirably doing in Tucson, Prescott, Phoenix and Yuma.

In the absence of direct sunlight, the actinic therapy, first made prominent by Finsen of Denmark, should be employed. X-rays have failed to be of the service expected of them and radium is too disfiguring to be considered.

Scarification, galvanocautery and curetting are useful in their particular spheres of necessity but, like radium, are often disfiguring.

Among medicinal measures, the sheet-anchor is, of course, salicylic acid mixed with some caustic base such as pyrogallol acid, arsenious acid or chloride of zinc. Here, again, the desideratum is the destruction of the lupus tissue with as little resultant scarring as possible.

A brief history of the case herewith presented the Society will now be given:

Patient: Mrs. G. O., age 38 years, married, no children, native of Colorado and at all times has lived in western states. Has resided in Arizona for last seventeen years.

On May 10th of last year she noticed a small pimple and scale on left side of nose; a few days later a group of pimples with scales appeared on the opposite side of nose. From time to time, various blotches or groups of pimples of small size appeared on nose and contiguous areas of face. One group which appeared under outer angle of left eye has entirely disappeared. The primary appearance of lesions when first seen by writer in August suggested lupus erythematosus more than lupus vulgaris.

By December, characteristic papules of lupus vulgaris were more in evidence. In January, a diagnosis of lupus vulgaris was confirmed by Dr. T. T. Clohessy of Phoenix.

Pathological exclusion of syphilis as a possible diagnosis of her case has been made by the blood tests performed in laboratories both in Phoenix and in Los Angeles. X-ray pictures of her chest are positive as regards latent tuberculosis. She responds to tuberculin skin tests. She is negative as regards heart, liver, or kidney findings. She has a history of, and still has, recurrent appendiceal attacks, the last one occurring one year ago and being of severe character. Other physical findings are negative, including a microscopic examination of tissue from the nodules.

Mild astringent therapeutic remedies were first used and found valueless. Heliotherapy was resorted to in September, direct sunlight being the agency employed. Under its use, patches of papules have come and gone and but little scarring has been left to mark their wake.

Aside from sunlight the patient now uses but one other therapeutic measure. Several times a day she applies gasoline to all lupid tissue. It may be of

interest to know that this use of gasoline is her own idea and it is cheerfully admitted by her physician that, in conjunction with the use of measured sunshine, it seems to be very efficacious in holding her lupus in subjection.

The following report of x-ray findings of her chest is furnished by the Pathological Laboratory of Phoenix and is added for the benefit of the record:

Reporting on the film of Mrs. O. brought to the laboratory today, this radiograph shows, on the right, moderate accentuation of hilus densities, some striation into the base and a slight irregular fibrous infiltration in the upper lobe, near the margin of the mediastinal shadow, but not extending to the periphery of the lung.

On the left, the hilus density is similar in character and extent, with slight fibrous striation at the first inter-space level and an area of more recent infiltration at the second interspace. This extends well to the periphery of the lung and may represent an active parenchymatous lesion.

DISCUSSION

DR. T. T. CLOHESSY, Phoenix, Ariz. (opening): I believe this case is an example of that very rare condition, or combination of conditions, designated by Leloir, of France, as lupus vulgaris sclerosus erythematosus, and by his fellow countryman Besnier, as lupus erythemato-tuberculeux.

Now, Leloir evidently considered it as originating as an ordinary lupus vulgaris by the local implantation of tubercle bacilli, their growth and development, and the evolution of the resulting reactionary lesions into a sclerosed condition resembling lupus erythematosus, hence his qualifying words, "sclerosus erythematosus," added to lupus vulgaris.

Besnier, on the other hand, by his designation "erythemato-tuberculeux," showed that he considered we had actually the two processes present, a true lupus erythematosus and an added lupus vulgaris.

Now, if we accept the prevailing view of lupus erythematosus, that it is a toxic erythema, the provocative toxin acting on the skin being derived from some internal focus of infection, the nature of the focal infection varying but being in this particular case tuberculous, the absorbed toxin in this case could produce the lupus erythematosus, and a later hematogenous infection from the same tuberculous focus could give the added bacillary growth producing the lupus vulgaris, it being universally admitted that lupus vulgaris is the result of the local growth of tubercle bacilli. Or the reverse could be true; the first process could be the lupus vulgaris, with a later added lupus erythematosus.

Thus could rationally be explained the presence of these two conditions, as in this case. It certainly looked like lupus erythematosus until one noticed the inflammatory papules on the outskirts of the larger erythematosus lesion, which most assuredly never form a part of uncomplicated lupus erythematosus pathology, and which papules on closer inspection proved to be lupus vulgaris papules, the miliary tubercles showing through the diascopes as the often mentioned and described apple-butter colored patches.

In order to thoroughly appreciate a lupus vulgaris or tuberculosis verrucosa lesion, or group of lesions, one should be able to visualize the unit or essential lesion, to trace its various phases of evolution as an uncomplicated lesion and as affected by secondary factors, such, for instance, as an added pyogenic factor resulting in ulceration. The irritation produced by the presence of tubercle bacilli brings about a new growth of tubercular tissue within the skin, which may remain for a long time as a papule, a nodule, or a more or less level area.

This tuberculous tissue may find its way to the surface and may be thrown off in a more or less dry condition—exfoliated, as it is called.

It may be affected by fatty degeneration, be absorbed and result in scar tissue without previous ulceration, or it may gradually slough off as part of an ulcerating process. Or the lesions may accumulate in the skin, in their various stages of evolution and involution, and present a combination of any or all these processes, a very complicated picture resulting.

A thorough understanding of the pathology and possibilities of evolution and involution of the one unit lesion is the key to an understanding of the multifarious appearances that may be presented by lupus vulgaris and tuberculosis verrucosa cutis.

DR. VICTOR RANDOLPH, Phoenix, Ariz.: Wish to emphasize one point mentioned by Dr. Clohessy, and that is the probable existence in these cases of some focus of infection elsewhere; that is important to remember, especially in young subjects. Have a woman patient, 36 years old, who had lupus in childhood; it cleared up at that time and about four years ago she had a recurrence, diagnosis being made by Dr. Sutton. Condition cleared up again. No attention was paid, in her childhood, to the possibility of pulmonary infection. At the present time she has advanced bilateral pulmonary tuberculosis; skin condition has disappeared. I believe that, if sufficient attention had been paid in her childhood to the possibility of a focus elsewhere, she might have avoided the condition she is now in.

DR. W. W. WATKINS, Phoenix, Ariz.: With regard to the use of radiation in treatment of lupus: where the patches are small and superficial, we usually prefer to use radium. We can control the superficial effects of radium more easily than we can those of x-ray, and the amount of scarring resulting will not be due to the radium but to the healing of the lesion itself. We have treated several cases of lupus with radium, with very satisfactory healing and cosmetic results. Where the lupus is extensive and involves the whole thickness of the skin, radium is not advised, as the scarring effects will be considerable; in such cases, if radiation is to be used at all, it should be by x-ray.

DR. N. D. BRAYTON, Miami, Ariz. (closing): I wish to thank Dr. Clohessy for his classical discussion of this case; also for the care and attention he has given to the patient. In regard to Dr. Randolph's statements: physical examination and x-ray of the patient here have already demonstrated things that we little suspected and that will be watched in the future. Am glad to hear Dr. Watkins say that the effects of radium can be controlled with good cosmetic results.

Wish to voice the appreciation of the association to the patient for her graciousness in appearing before us.

Koch Cancer Foundation. On September, 22 and 23, according to an announcement just issued, the second annual convention of the Koch Cancer Foundation will take place in Chicago, one of the meetings being a joint session with the American Association for Medico-Physical Research. The American Association for Medico-Physical Research was organized in 1911 by the outstanding quack of the century, Albert Abrams. It is stated that some three hundred physicians will gather to discuss the use of the Koch remedy in cancer. But one meeting is to be a joint meeting with the distinguished members of the American Association for Medico-Physical Research. The Koch representatives should add tone to this remarkable assemblage. (Jour. A. M. A., July 23, 1927, p. 296).

BUNIONS: DIFFERENT TYPES, DIFFERENT TREATMENT

MAYNARD C. HARDING, M. D., F. A. C. S.,
San Diego, California

Read before the Thirty-Sixth Annual Meeting of
the Arizona State Medical Association, held in
Tucson, Arizona, April 21 to 23, 1927.

The whole subject of bunions is still in much dispute among surgeons and no paper will call forth more acrimonious discussion before an orthopedic body than one heralding the long expected, but often postponed, perfect operation. This can be well illustrated by a personal observation in the Section of Orthopedic Surgery of the American Medical Association meeting at San Francisco in 1915. A splendid paper on halux valgus had been torn to shreds by a discussion lasting long past the allotted time, when in walked Dr. John Ridlon, now the dean of American orthopedists. In his well known manner he strode to the front of the room saying as he walked:

"Gentlemen, I have not had the pleasure of hearing the paper, nor the advantage of hearing the discussion, but I wish to put myself on record as disagreeing with everything that has been said here on the subject."

One other statement was made at the time which is worth repeating. Someone, I do not know who, stated that, as a general practitioner over a period of thirty years, he had noted that most bunions were hereditary. His remarks were greeted with considerable laughter, but it happens that that was probably the first announcement of what is now recognized to be the truth.

It appears to me that the reason for this sharp divergence of opinion lies in the fact that we are still lumping as cases of halux valgus at least four distinct entities, which should be approached from as many different operative angles. Of course not every case is of a pure type, but each has its outstanding characteristics which determine its correct treatment.

Let us consider them in detail:

The first is a true halux valgus. Its characteristics are (1) a normal position of the metatarsal bones, particularly the first; (2) an exostosis on the inner, or mesial, side of the first metatarsal; (3) this is usually overlaid by a bursa subject to periodic inflammation from pressure or friction and covered by a corn—this last being Nature's effort to provide a protection to the tender bone underneath; (4) the great toe is deflected outward but not usually more than forty-five degrees; (5) the toe has no or little rotation. This type is exceedingly common in middle aged adults,

and may never cause a symptom unless inflamed by a poorly fitting shoe.

The second type is, strictly speaking, not a halux valgus but a metatarsum varum, a name given, I believe, by Dr. Truslow of Brooklyn. This is the hereditary type. It is characterized by a marked inward divergence of the first metatarsal bone from the second, causing a separation of the two. This foot approaches the type of a hand with its off-set thumb, and is the normal in many barefoot races. If such a person never wore shoes he would have widely separated first and second toes. There is the same exostosis, bursa, and corn as in the other type. The toe is deflected outward, often making nearly a right angle with its metatarsal, and is apt to be rotated so the inner border is down. The important thing about this type is the condition and position of the sesamoids. These little bones, which are normally the size of a split pea, lie in the tendons of the short flexor muscles, and play in two grooves on the under side of the head of the first metatarsal within the joint. Their upper free surfaces are covered with synovial membrane. They are, of course, analogous to the patella. In the type of bunion under discussion they are displaced toward the outer border of the foot. The mesial sesamoid then occupies the groove of the outer, while the outer lies between the first and second metatarsal heads. After this condition has lasted some time and spells of inflammation have occurred, one or both of the bones hypertrophy, while the outer one often becomes adherent to the metatarsal bone. When this attachment takes place, a condition of partial halux rigidus is produced, which is usually painful. The toe is then held constantly in deformity and cannot be manually corrected. This one-sided check-ligament action, pulling always on the under border of the base of the great toe, I believe to be the principal cause of the rotation noted above. This type nearly always shows depression of the second, third and fourth metatarsal heads with calluses.

The third type is halux valgus with osteoarthritis. The arthritis may develop in either of the foregoing types, or the deformity and arthritis may develop together. Rigidity is apt to be marked by extreme pain, and other joints of the foot are affected. Bony outgrowths are a feature.

The fourth type is halux rigidus. This is not usually classed as a bunion, but it is so closely allied in pathology that it really belongs in the discussion. This rigidity, as stated, may be due to adherent sesa-

moids, or to osteo-arthritic exostoses blocking joint motion. It is often due to trauma. Destruction of the joint surface is another cause. The condition is very painful because of the great strain brought to bear on the toe in propelling the body. The important thing is the position of the toe. Since we all wear heels—men, three-fourths to one inch and women, one and five-eighths to three inches—the toe must be able to extend at least forty-five degrees above the straight position to enable us to stand with comfort.

If the foregoing pathology be granted as reasonably correct, the question of treatment will at once divide itself into corresponding groups. Only a small percentage of bunions need operation. If it is possible to make the patient comfortable by proper shoes, corrective devices or measures to eliminate inflammation, surgery should not be considered. But if relief cannot thus be secured, or cosmetic reasons are important, operation may be advised. Inability to get shoes to fit the badly deformed foot is also a proper indication.

Perusal of the recent works on orthopedic surgery reveals a number of standard operations, apparently advised indiscriminately for all types alike. The principal ones are (1) excision of the exostosis and a slice of the head with or without tenotomy of the extensor tendon, (2) cuneiform osteotomy of the shaft of the metatarsal bone, (3) osteotomy of the base of the metatarsal to close the gap between the first and second metatarsal bones, (4) excision of the whole metatarsal head and interposition of the bursa—the Mayo operation, (5) removal of the sesamoids, (6) removal of the base of the great toe, (7) special plastic operations of Silver, Truslow and others.

Let us take each type separately and see what is the very least we can do to relieve the symptoms, for it is a surgical axiom to do the least possible surgery to achieve the desired result.

Type one, true halux valgus. The indications are to remove a painful bursa and exostosis, and to restore somewhat the alignment of the great toe. A clean diagonal excision of the exostosis, including enough of the articular surface to give a cosmetic narrowing of the forefoot, with dissection of the bursa, if thickened, is usually enough. Care should be taken to remove any exostosis lying on the dorsum, and to see that the toe corrects easily. The toe should be held in full correction by a plaster spica around the foot and toe. This can be slipped off like a mitten and is worn at night for several months.

The second type, metatarsum varum. The indications are: removal of the painful exostosis and bursa, correction of the valgus and rotation of the great toe, and narrowing of the foot. The exostosis and bursa are treated as before, perhaps more radically. The sesamoid bones, by their displacement and especially if adherent, are the principal bar to reduction. They should be removed through the same incision, made in this case convexity down. This is not easy, but is facilitated by a short bladed knife, a small chisel curved on the flat, and a strong hook. These once removed, the toe usually corrects easily, but may need a small cut in the external side of the capsule. It is true that correction may be secured by freeing the sesamoids without removal, but the greatly hypertrophied sesamoids cannot be made to stay in their old grooves, and their tendency is to find lodgment again between the metatarsal heads. The toe is over-corrected with special care to correct and control the rotation. It is put in plaster in extreme abduction and plantar flexion, to restore at once its lost power of propulsion. The patient walks on his heels in two days and naturally in two weeks. The plaster mitten should be worn at night as before, and a metatarsal pad is almost always indicated. It is in this type that the mutilating osteotomies, head excisions, and like extensive operations are most frequently done. They simply are not necessary.

The third type, osteo-arthritis. Beware of them. Do not operate if any inflammation is present. Treat the arthritis first. When ready for operation be guided by the state of the joint surface. If it is found normal, proceed as in the two foregoing types, removing the exostoses with clean cuts well up onto the shaft beyond the inflamed area. If the joint surface is rough, and especially if rigidus is present, remove a half inch from the base of the first phalanx of the great toe—the Kellar operation. Dress this toe in abduction and dorsal extension, as a flare-up may cause stiffening.

The last type, halux rigidus, is quite similar. With a normal joint surface remove the spurs which cause stiffening. If the synovia is doubtful, do the Kellar operation. Dress in dorsal extension. This position is the important thing, as even a rigid toe may be painless if well cocked up.

The treatments outlined here have proven satisfactory and applicable to the majority of cases. They are simple of execution, and fairly standard in technic. No natural supporting structure is removed, while attack is confined to pathologic tissue. I commend

to you a more careful differential diagnosis in your bunion cases.

DISCUSSION

DR. R. D. KENNEDY, Globe, Ariz. (opening): The subject has been so completely and conservatively covered, that there is little I can say in addition. I agree with everything that the essayist has said. There is a frequent mistake made by men who are not seeing many of these cases; where there is a slight bunion and these sesamoids are fairly prominent, with dropping of the metatarsal heads, resulting in metatarsalgia, the mistake may be made of thinking the pain is due to the sesamoids, and some men will undertake the operation of removing the sesamoids to relieve the pain, and they do the patients no good; as a matter of fact, they are usually much worse. The line of treatment outlined is conservative and I cannot add anything to it.

DR. D. F. HARBRIDGE, Phoenix, Ariz.: Would like to ask whether these conditions are more prevalent in the female than in the male, aside from the congenital type, and, if so, can the wearing of high shoes influence the development of enlarged joints of the toe?

DR. ALFRED E. GALLANT, Los Angeles, Calif.: Dr. Harding's paper is very interesting, because the problem of bunion operation is one that will easily give a man a black eye if he has bad results. I have seen a number of cases of the Mayo operation and the patients had painful feet afterwards, some of them lasting more than a year; this procedure should be completely eradicated from the list of operations. I have seen a number of cases that illustrate the hereditary tendency in these cases. Another thing, in cutting off the head of the bone, infection frequently occurs, the only reason for which is that there are bugs in the skin and when the ends of the bones are cut off they are allowed to get in and develop. The after-treatment is important. If you have a toe that sticks up and you try to put that toe in a shoe, you will have trouble. As suggested, abduction and plantar fixation is the best method, because, when the foot is removed from the bandage, it will fall into normal position.

DR. M. C. HARDING, San Diego, Calif. (closing): With regard to the occurrence in women as compared to men; there are three or four in women to one in men, the reason being the type of shoe. Do not think the shoe was the cause in this case, but, on the whole, the constant driving down will tend to spread that portion of the foot and increase any natural tendency to bunion. The short shoe does not cause bunion, but it can act as one of the causative factors. In the case where the heads of the bones were cut off, there is an osteo-arthritis; patient did not have bunion, but had hallux valgus; in the x-ray you will see large branching exostoses clear across to the sesamoids; a month or two after the operation, she still had bunion toe. There is nothing to do in that case except to take off the whole head again. Such a case should not be operated; medical treatment should be used and, later, take off enough of the toe to get rid of the deformity. The Mayo operation in that case would cripple the woman for life.

BRITTLE BONES AND BLUE SCLERA

ELLIOTT G. COLBY, M. D.,
San Diego, California

(Read before the Thirty-sixth Annual Meeting of the Arizona State Medical Association, held in Yuma, Arizona, April 21 to 23, 1927.)

During the past few months I have had under my care a family, three of whom have brittle bones associated with blue sclera and one of whom has blue sclera but

no fractures. In a review of the literature I have found the condition rare enough and the nomenclature so confused and involved that I thought the cases of sufficient interest to present.

In the literature I found the term fragilitas ossium applied to many and all conditions where there is a tendency to frequent broken bones.

The condition of frequent broken bones may be congenital or acquired, it may be due to developmental defects or may be of the type we see in the aged or insane, and in chronic wasting diseases where there is a general absorption of the mineral constituents normally found in bone. It is the idiopathic type of bone fragility which I am particularly interested in discussing and these cases fall under one of three conditions.

1. Osteogenesis imperfecta, first described by Vrolik in 1849. Here we have defective development of the cranium and frequent broken bones. It is a disease of the foetus and fractures are often found at birth which may have united with large callus formation. If the child does not die in early life the bones tend to become less brittle and fractures less frequent. This condition is not known to be hereditary.

2. Osteopsathyrosis, first described by Lobstein in 1833. In this condition there are many idiopathic fractures in young adults following slight trauma. It is held by many men that this disease is but a delayed manifestation of osteogenesis imperfecta, but in all probability this is not the case. It occurs in children and young adults who were apparently normal at birth. It is similar in many respects, pathologically, to the third condition which I am to describe but it is not associated with blue sclera and is not hereditary.

3. The syndrome of brittle bones and blue sclera. It is this type of fragilitas ossium which I wish to describe in more detail, and I will review the history of the disease and its dominant characteristics.

Many of those who have the blue sclera show also frequent broken bones, hereditary deafness and hypermobility of the joints. Blue sclera was first described by Von Ammon in 1839. In 1896 Spurway first called attention to the relation of brittle bones and blue sclera and reported a family of fourteen persons, ten of whom had multiple fractures. The next report was by Eddowes in 1900 and credit for the first recognition of brittle bones and blue sclera has been, for some reason, universally given to him. Since 1896 there have been about twenty-one family trees reported which

show the association of brittle bones and blue sclera. These were all summarized by Key in 1926. In this series of twenty-one families, there were 477 individuals; of these, 241 had blue sclera and of those having blue sclera, 146 had fractures and fifty-six were deaf to more or less extent. The condition is transmitted only by affected parents to their children and, in Key's summary, was found to be more often transmitted by females than males. Children with normal sclera born of affected parents, will have normal children and those born with white sclera never suffer from brittle bones. Deafness occurs in later life and was not described as a part of the syndrome until 1917. Deafness has been thought to be due to an abnormal deposit of calcium salts in the ear. Key describes the syndrome as hereditary hypoplasia of the mesenchyme, as he found a hypoplasia of all mesenchymal tissue in his case. In the bones the lamellae were irregular in arrangement. There were many large canals in the compact bone and the tendo achillis was found pink and translucent and reduced in diameter. In the eye there is an abnormal transparency of the sclera with probable decrease in its thickness, which permits the blue area to shine through, thus giving the peculiar blue appearance.

The fractures in these cases are not spontaneous, as a rule, but occur as the result of trauma which would seldom fracture a normal bone. The fractures probably occur more easily on account of the irregular lamellae and canals found in the cortex of the bone, and, if the condition is a true hypoplasia of the mesenchyme, there is probably an abnormality in the fibrous matrix of the bone.

The calcium and phosphorus content of both blood and bone has been, in most cases, reported normal.

REPORT OF CASE

A girl 5 years old was brought in for x-ray of a broken leg. This was her ninth fracture of a long bone. The father is living and well, has blue sclera and has four fractures of the upper extremities. He is also deaf. He has four brothers and sisters, two of whom have blue sclera and the baby, 16 months old, had a fracture of the humerus when the mother lifted it from the bath tub.

I was able to obtain the history of the family for four generations, in all, 32 members. Of these, ten have had blue sclera and seven of these had one or more fractures, and four have been deaf. The paternal great grandfather reports ten fractures of the long bones, had blue sclera and is deaf.

The patient was a normal full-term baby, breast fed, and has had no severe illness.

Present illness: At 16 months she had a greenstick fracture of left tibia when pulling herself up

to a chair. At 18 months, a fractured femur from falling off the bed; at 20 months, a greenstick fracture of right wrist when playing on floor, cause not known; at 3 years and 4 months, one bone in right forearm just below elbow, from fall on frozen ground; at 3 years and 6 months, same bone broken over from fall of 18 inches. The other bone in forearm was accidentally broken when doctor was setting fracture. At 3 years and 9 months, right forearm was broken again in fall from tricycle. At 5 years and 4 months, both bones in left leg broken just above ankle when sliding down slide at school. It was for this fracture that I first saw her when she was brought in for x-ray examination. The fractures were not associated with a great amount of pain and tended to heal readily.

Physical Examination: A girl of 5 years, height 3 ft. 7 in.; head, normal in contour; ears appear normal; nose, negative; teeth, good condition—one front incisor missing and one is loose. Tonsils hypertrophied and infected. Eyes, pupils regular and react normally; slight embryotoxin present; sclera a china blue in color; intra-ocular tension seems normal.

Glands show no adenopathy; chest is flat and ribs prominent, no rosary present, lungs are normal; expansion good; pulse, 80; no abnormal heart sounds; abdomen, normal; reflexes, normal.

Extremities: hyperextension marked, fingers can easily be bent back at right angles. Upper extremities: no deformities, all motions normal limits; lower extremities: left ankle turns in and a brace is necessary. She is able to bear weight but walks with limp.

Blood: Wassermann, negative; red count, 3,340,000; white count, 12,800; hbg., 70 per cent. Differential count shows polys, 47 per cent, small mono, 33 per cent, large mono, 13 per cent, tran, 3 per cent eosino, 2 per cent. Calcium content of blood: one examination, 15.4 mg. per 100 c. c. blood. This is not conclusive.

TREATMENT

No satisfactory reports of treatment are to be found in the literature. After adolescence is passed, fractures tend to become less frequent.

All trauma which might cause fractures should be avoided. Cod liver oil and phosphorus may help. Thyroid preparations have been tried with no success. The prolonged use of splints should be avoided.

Ferri of Naples reported no fractures in a case of congenital brittle bones following a series of quartz light treatments. In my case, a series of twelve quartz light exposures was given over a period of six weeks, and this is to be repeated. This was also given to her affected brother and sister. It is hoped that this will reduce the tendency to frequent breaks, but time alone will tell.

SUMMARY

1. Of the three types of idiopathic bone fragility, there is only one which is known to be hereditary.

2. This is the syndrome of brittle bones, blue sclera, deafness and hypermobility of the joints.

3. The condition is inherited directly from an affected parent and no generations are skipped. Children not affected do not transmit it to their children.

4. It is due to a congenital hyperplasia of the mesenchyme.

5. Little is known of treatment—usual therapeutic measures have been of no avail.

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DISCUSSION

DR. R. D. KENNEDY, Globe, Ariz. (opening): The cases exhibited under the title of brittle bones and blue sclera are evidently a distinct clinical entity. I have never had a case under my personal observation. A short review of the literature does not show any condition of the bones so far as I have been able to learn, associated with blue sclera. This is evidently some disturbance of the calcium metabolism of the patient.

I am glad to have seen these patients and have enjoyed the paper very much.

DR. D. F. HARBRIDGE, Phoenix, Ariz.: It is an interesting fact that so few of these defects are transmitted through the male, but usually through the female. In this particular situation, we have one male child and one female; it would be interesting to observe later in life as to this feature of transmission. No doubt the condition of the sclera is due to thinning of that tissue. I took opportunity to test the tension of both eyes and the sclerae feel much thinner than you would expect to find in a person of his age.

DR. GEO. E. SHIELDS, Yuma, Ariz. (closing): I should like to have had some one suggest a correct terminology for this condition. Except that I circumcised one of the boys, Dr. Colby treated these patients, otherwise, and I do not know anything more about it.

THE TREATMENT OF GENERAL AND LOCAL INFECTIONS WITH MERCUROCHROME INTRAVENOUSLY

W. C. CAIN, M. D.
Yuma, Arizona.

Read before the Thirty-Sixth Annual Meeting of the Arizona State Medical Association, held in Yuma, Arizona, April 21 to 23, 1927.

There are now thousands of case reports on record in the literature attesting the efficacy of mercurochrome 220 soluble given intravenously in the treatment of general and local infections. Young¹, in one paper, analyzes 680 cases from authentic case records, in which cure or permanent improvement is shown in 63 per cent. In 196 cases, reported by Braasch and Bumpus², treated in one year at the Mayo Clinic, in which benefit was shown in acute and sub-acute infections, with less in chronic affections, there was one death which may have been caused from toxemia. They, therefore, advise caution in the use of this treatment.

Dudgeon³, in the *London Lancet*, reports 150 cases treated with satisfactory results. He reports daily injections for five days without observing any injurious effect. He believes hemolysis with protein shock may account for a part of the good effect. This has been refuted by Young with a report of a large number of cases showing cure or permanent improvement, in which there was no notable shock. In my own experience I have not noticed anything more than a remote resemblance to non-specific protein therapy. After the initial chill and fever, I have observed that the patient at once appears better and whatever improvement there may be is usually permanent.

In a series of twelve cases of pneumonia in children, reported by Freeman and Hoppe⁴, there were two deaths, in neither of which was there any cause to suspect the remedy. They think highly of its use and undertake to explain its action with the theory that, after leaving the blood stream by osmosis, it exerts its beneficial effect. Dogs were injected with mercurochrome; one hour later they were killed, the lungs removed and their tissue juices were squeezed out. One drop of the tissue juice was mixed with a standard loopful each of staphylococci and streptococci. Smears were made and incubated for 24 hours. Controls showed luxuriant growth, but the bacterial suspension of tissue fluids showed only a few scattered colonies. They conclude that the tissue fluids of the lungs after injection with mercurochrome are inhibitory to the growth of bacteria.

The writer, in consultation with Dr. J. D. Forrest, saw a case of pneumonia in a

child which improved in a most striking manner after one injection of mercurochrome intravenously. This was a case of acute septic sore throat with marked glandular involvement. After a prostrating illness of one week's duration there developed a double acute otitis media. After drainage had been established by incision of both drums, there developed consolidation of the left lung with acute fibrinous pleurisy and a pericardial friction rub; 10 c. c. of one per cent mercurochrome was given intravenously with complete abatement of all the symptoms within a few hours.

There are many able clinicians and laboratory investigators who do not find mercurochrome of value when used intravenously. Major John E. Walker⁵, in a recent article, has shown that staphylococci and streptococci grow better in blood containing 1:25,000 mercurochrome than in normal blood, and that, by increasing the strength of the mercurochrome up to 1:400 for staphylococci and 1:800 for streptococci, they can be made to grow still more luxuriantly. He states that mercurochrome is hemolytic when added to washed red blood cells suspended in salt solution. His experiments indicate "that even in the presence of serum mercurochrome is much more toxic for red blood cells than it is for bacteria." He further states that he is unable to agree with Hill⁶, who has shown a bacteriostatic action of blood following the injection of mercurochrome, or with Piper⁷, who has shown that streptococci were killed in a dilution of 1:8,000 in defibrinated blood. Redewill and Potter⁸, working at the University of California, found that, with the diphenyl carbizide test, it was possible to foretell the type of reaction in each patient. Later these same investigators proved that by giving glucose with the mercurochrome it was possible to prevent the violent reactions.

The number of case histories already published in which there is a vast amount of repetition, makes the reading of case histories at this time unnecessary. In a series of twenty-eight cases there have been two deaths. Both were cases of septicemia, and, following any standard of treatment, their lives would have been despaired of. The cases in which there was prompt cure included pyelitis, acute rheumatic fever, lobar pneumonia, acute septic sore throat, acute prostatitis, epididymitis, acute pyogenic skin affections and erysipelas. Cases that have shown only improvement are acute, subacute and chronic gonorrheal

urethritis. In nearly all cases mercurochrome was used only after failure with standard treatment.

CONCLUSIONS.

It would seem that there is now ample evidence to support the theory that mercurochrome intravenously has an inhibitory effect on bacteria in the blood and body tissues, and, in some cases, may act as a bactericide. However, it is a potent agent, capable of doing harm and should be used with caution.

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DISCUSSION

DR. R. D. STROUD, Tempe, Ariz. (opening: I wish I could be as enthusiastic about mercurochrome as I was before using it. I wish I could say a lot of good things about it. There are many good things said about it in Dr. Young's article in the *Archives of Surgery* for January, 1926, where he has described in detail six hundred cases, with sixty-three per cent of cures. On analysis of these cases, you will find many like this: a doctor way out in the sticks has a patient who has been confined, with labor lasting twenty-four or thirty-six hours. Seventy-two hours later she has a chill and fever and is pretty sick. She is given a dose of mercurochrome and the next morning she is well. There are just thousands of these cases in which you give nothing, or ten grains of quinine, and they also get well, because they do not have septicemia. You will find many such unproven cases in the report. Many such cases are suffering from protein shock from blood absorption.

I have found mercurochrome of great benefit, especially on gonorrheal ophthalmia, of which I see much among the Indians and Mexicans; a two per cent solution in the eye every half hour will control that infection better than protargol or argyrol.

I have had a series of head cases with streptococcic or staphylococcic infection, six of the first and one of the latter. Five of these were treated with mercurochrome, a full dose being given each day for five days; did not observe bad effects, there being a distinct chill from fifteen minutes to half an hour after injection. In none of these was there improvement from the mercurochrome. Four of them were given blood transfusion after the mercurochrome had been tried, with good results in three; it seemed as if there was enough antibody in the donor's serum to stop the progress of the infection. These seven cases were proven to be septicemia. In pyelitis, and in many of the minor infections, I have had good results, though I have had a little better effect from milk or non-specific protein—a few minims into the vein or deep gluteal injections.

Mercurochrome has practically supplanted iodine in small wounds, especially in children, as it is non-irritating.

I cannot see how twenty-five c. c. of a one per cent solution, which is the average dose, put into the whole volume of blood can sterilize that blood. For many years we have been looking for something to sterilize the blood infected with cocci; I do not believe we have found it in mercurochrome. I agree with the English writer who thinks it is a protein shock from dissolving red corpuscles. Dr. Young does not think the effect is due to this, but he does not try to explain the effect; something goes into the blood, reaction occurs and frequently the patients get well. However, I cannot report that any of mine got well under mercurochrome.

DR. M. C. HARDING, San Diego, Calif.: I was real enthusiastic over mercurochrome at one time, but in our community it is not being used intravenously except at the Naval Hospital. They use it quite a little and think their results are good, but they are not checked so that they can be reported definitely and scientifically.

DR. CHARLES S. VIVIAN, Phoenix, Ariz.: I wish to say what I have said before, that you must not treat pyelitis by drugs by mouth or intravenously if you have obstruction in the ureter. There are two factors in pyelitis, one is infection and the other is back pressure on the kidney. You must relieve both, and you cannot relieve a block in the ureter by mercurochrome in the vein.

DR. W. C. CAIN, Yuma, Ariz. (closing): I have treated two cases of pyelitis; in one the diagnosis was made on the clinical symptoms after operation. Urotropin had been given by mouth and intravenously for several days; was also given resorcinol. The fever continued high, around 104. After one injection of thirty c. c. of mercurochrome, the fever and other symptoms cleared up within twenty-four hours; when I saw her the next day the look on her face told me she was better. The fever has not returned during two years. The second case also followed an operation, and the fever cleared up the same way. The other case I do not claim to have been septicemia except from clinical observation; but there was an infection with a long continued fever, with every indication of an early fatal outcome; after mercurochrome, the symptoms, fever and other evidences of diseases all cleared up within twenty-four hours. The results I have seen are more than I have observed from protein shock or other treatment.

THE SELECTION OF A PRESIDENT OF THE UNIVERSITY

(By WILLIAM V. WHITMORE, A.M., M.D.)
(Treasurer, 1914-17—Chancellor, 1917-18)

Personal Experience

In 1897, when I was appointed to a two-year term as Regent of the University of Arizona, the resignation of the president had been accepted one week earlier.

In May, 1914, at the first meeting of my four-year term, the resignation of the president was accepted. So, in each case, the first problem we had to face was the selection of a president. In 1914, the majority of the members of the board were to be out of the state much of the summer. Consequently the committee on canvass for a president consisted—Hobson's choice—of the poor preacher and the poor doctor, who could not afford a vacation.

The committee had its work well in hand, and at the first possible meeting made its recommendation to the board. The regents, after a thorough consideration of the qualifications of several candidates promptly and unanimously endorsed our recommendation. Dr. Von Klein Smid—at no time an applicant—was invited to visit us and at that visit was offered the position, which he accepted and filled for nearly eight years.

Conditions in 1914

There were a few more than 200 regularly enrolled students. Good work was being done, but, unfortunately, nobody knew it. Practically all of the high school teachers of the state—wherever born—were educated outside of Arizona and knew very little of the work of the University. Quite natural, then, that some well-known institution east or west should be seriously considered and usually selected. The University was not getting the patronage from our own people that it deserved.

A careful consideration of this situation convinced the committee that the most important thing to be kept in mind by the regents in the selection of a president was the necessity of making the institution known to the people of the state.

Qualifications in 1914

We finally centered upon four points or qualifications that we felt were essential in a president at that time:

1. A pleasing personality—a man who would attract rather than repel.
2. A "mixer"—in the best sense of the word.
3. A good speaker. We felt that this would prove a good advertisement for the University.
4. A young man. We concluded that such a man would be more contented in this small institution and would give greater promise of a long term of service.

What shall we now say of these qualifications that seemed so important 12 years ago? My advice is, in the words of the poet, "Forget it." While, of course, a pleasing personality and some ability as a "mixer" are valuable to a man in any walk of life; and, while the president should be able to state clearly what he wishes to say, yet the University has means of making itself known to the people of Arizona other than by an occasional visit of the president. The University now has some 1,000 matriculates—not all are graduates—residing in 80 cities, towns and communities in Arizona. Practically every high school has one or several graduates in its corps of teachers and nearly every community has several matriculates engaged in various lines of activity. The people of Arizona know of its University, even if they should not see the president from one year's end to another.

At my last visit to my own Alma Mater, in 1920, that college, founded 56 years before, was just inaugurating its third president. But that is in staid New England. As far as the University of Arizona is concerned, my honest opinion is that any president, worth his salt, would in 10 years—more or less—accept promotion to a wider field of usefulness. Consequently there is no need of planning for more than that length of time.

Preset Situation

From the year 1910 to 1920 the population of Arizona increased over 63%—exceeding all other states. During the first half of the present decade the reports show more than 30% increase. These additional people mean more high schools, larger classes and more young people seeking the advantages of the University. My understanding is that the percentage of increase in regularly enrolled students from 206 (1914) to 1260 (1922)—these dates representing Dr. Von KleinSmid's incumbency—is practically unprecedented in any university or college in the country.

Fifty-three high schools in Arizona, some 42 other states and nine foreign countries now contribute to the enrollment. Some of us have seen, with our own eyes, the institution grow from one to 23 buildings; a faculty of eight increase to some 130 and an enrollment of nine regular students mount to 1615. In fact, our graduating class each year now equals the number of students regularly enrolled 12 years ago.

The professional rating of the University may be learned from a Bulletin of the Bureau of Education. The concluding paragraph of a Report of a Survey of the University, made in the spring of 1922—before Dr. Marvin had ever seen the campus—sums up the growth of the institution. The final sentence is as follows:

"The people of Arizona must realize that their institution is no longer a high school of early years, nor even the simple college of 20 years ago, but that it is a real state university, comparing favorably in scope with the higher educational systems of most of the other states of the Union."

This hardly bears out the frequently encountered propaganda that, at that date, the institution was a fourth-class one. The facts are that somewhere about 1917 the University was rated "Class B—with Restrictions." The restrictions, which were due to lack of equipment in the Electrical and Mechanical Departments, were, a little later, removed and the institution became "Class B." The history of its promotion to "Class A" will be of interest to the people of Arizona. For several years this promotion was blocked by Dr. Kendrick C. Babcock—former president of the University of Arizona, now Provost of the University of Illinois—who was chairman of the committee passing upon such matters, because he could not believe that the one-horse institution, over which he had presided for seven years, could have sufficiently developed to justify such recognition. After a comparatively recent visit here, he could not sign on the dotted line quick enough. (Dr. Babcock inspected all the University—except the youthful president, who happened to be out of the city that day).

A President—Why?

Most colleges and universities seek for this position an educator—a man to direct and supervise the work of the faculty. Some institutions emphasize the word "organizer" or "administrator." A few institutions, with vast holdings, feel the need of a "financial wizard."

Most students—particularly those who are seeking a general education rather than professional training—will find, in after life, that the most valuable thing they can carry away from the university is not learning nor yet intellectual development but rather an appreciation of, and interest in the finer things of life—its higher values. True education has for its object the cultivation of the noblest aspects of human life. It should not be thought of as a means solely as an introduction or a preparation to a career. It should be something that permanently enhances the sanctities of personal experience, a truly cultural process, broadening the outlook on life, making deeper the significance of living, and affording permanent satisfactions.

"To make the mind a pleasant
Place to spend one's leisure—
That is the art of life."

All educational institutions should see that every influence—the "academic atmosphere"—is always elevating and ennobling. In my opinion, it is just as much the duty of the president to see that, both by precept and example, every line of activity of the institution be on a high, ethical plane as it is to see that the head of the Department of Mathematics be efficient or that the funds be properly expended. The university has a responsibility along this line, to the students who seek its doors. It will devolve upon the president to see that this responsibility is fully met.

A President—How?

Regardless of the number of applications, a cursory perusal of them will undoubtedly reveal some half dozen more prominent than the others. And a more careful consideration of this small number will presumably result in their being graded—1, 2, 3, etc. Of course, the further investigation by the regents of those who arouse interest may assume quite a broad and quite a varied scope with the different candidates.

I doubt if any board ever has the easy time of selecting a president that we had in 1914. We received invaluable assistance from Bishop Edwin Holt Hughes—former president of De Pauw—who had the reputation of having placed more college and university presidents than any man in the country. Upon the request of the committee to suggest a candidate, he wired the name of Dr. Von KleinSmid. There were three other reasons:

1. As it happened, this first name presented to us stood, throughout the canvass, head and shoulders above the other 32 candidates.
2. By a peculiar coincidence, his sponsors touched upon the identical points that we had already agreed upon.
3. We had a pretty definite idea of what we wanted, we were not "shopping."

Quite different was the experience of the board of 1922. According to the newspapers, for some eight months they had candidates galore in conference. I have never learned whether the candidates did not suit the regents or the regents did not suit the candidates.

A President—What?

I believe that every one will agree in the necessity of certain general qualifications, such as :

A broad view. An observation of over three score years has convinced me that the really big man talks less of himself and his achievements; insists less upon deference and homage from others; and, at the same time, exercises more consideration to associates and subordinates; while the small man is never able to see beyond the limits of his narrow vision.

A man of recognized ability—not necessarily, in my judgment, of national reputation—but of such

outstanding ability as to command at once the respect and loyalty of every member of the faculty.

No man in Arizona will require greater discretion, tact and diplomacy than the president of the university and this fact should be duly considered.

Those personal attributes, which everybody expects the holder of such a position to possess, such as: unquestioned veracity, innate honesty, absolute integrity and a high moral character—a fit exemplar for every student who may come under his influence.

If I had anything to do with the selection of a president, there are certain other qualities, of which I would want to be sure—even if it meant a personal communication with several of the sponsors of the leading candidates.

First—The president of any organization should be, above all, a man of decision—with backbone. He should be able to say “yes” or “no” and stay with it—till convinced of error. The presidency of a university is no place for a “wishy washy” man. (On the other hand, it is no place for an egotistical, opinionated or dictatorial person). To my personal knowledge this lack of decision has, years ago, led to needless complications.

Second—While I would not demand literal “popularity” in the candidate, yet I would insist that he have, at least, ordinary ability in getting along with others. Some dozen of years ago, there was a man connected, for a few years, with the Agricultural department. He was thoroughly competent, but just could not get along with people. Later he was selected as president of an agricultural college in a neighboring state and I inquired of a former regent of that institution about our friend—hoping he had learned discretion. I was told that he had not been in his new position one month before he had a big row with his board of regents and, quite naturally, remained there only the one year. So our regents should labor earnestly to secure a man, with whom they, at least, will be able to get along.

Third—No candidate, although he might be rated 100% in the foregoing qualities, would ever receive my unqualified approval, unless I had positive assurance that he was SANE. In this word I include those various meanings often expressed by such terms as: good sense, correct judgment, safe, sound, rational, balance and poise. This is much more important than mere brilliancy. No man, who has not a sane and wholesome outlook upon life, should ever be placed at the head of an institution for young people. The president must be a man of discrimination—able to differentiate the essential from the non-essential; the important from the unimportant; the permanent from the temporary.

To recapitulate—The president should be a man of absolute integrity and intrinsic worth; of broad, scholarly and sympathetic culture; an educator and organizer; a harmonizer and diplomat; a man of sound judgment and effective forcefulness; with broad vision and high ideals; with personality and inspiration—an intellectual and moral leader.

A President—Who?

Just who this man may be—Smith, Jones or Brown; from what institution or section of the country he may come; by whom recommended or discovered; the particular brand of his political, religious, social or economic convictions—all these are insignificant compared to the man himself. Who? Any man the regents may be able to secure, who possesses these—or equally good—qualifications.

The last two sentences may well be qualified. The farther the president comes from Arizona and the less he knows of the University, the better for all concerned. He should be absolutely unbiased—a man

with whom every member of the faculty may start with a clean slate; and with whom the latter's retention and promotion will depend upon future efficiency and loyalty.

Other things being equal, I would prefer a man who had already had successful experience in that position. As long as the institution was very small, it was natural that inexperienced presidents should be selected. But with the present size and development, I believe that former experience would prove more valuable. Such a man would undoubtedly have had occasion to solve 75% of the problems that ordinarily arise in such a position. These could be disposed of almost with the snap of the finger and his time and energy could be conserved for the consideration of the more important problems—either new or indigenous to this section. In my judgment the University of Arizona is no longer under any necessity of training its presidents.

Compliment Board of Regents

The present board of regents is to be complimented upon the excellent judgment it exhibited in the choice of Dean Cummings as Acting-President. No more conscientious, worthy and capable man could have been selected from the entire faculty by any regents. The unanimous action was simply ideal.

The sensible, broad-view and business-like attitude with which the regents entered upon their work—for the hold-overs are rather new to actual authority—is most commendable, the new members showing an intelligent grasp of the requirements of the University hardly to be expected from such recent appointments. Without exception the members of the board had only one thought and one aim, viz. the welfare of the University. All demonstrated to the people of the state their fitness for the position.

The perfect harmony and unanimity of the regents—after years of schism—and the outspoken satisfaction of the selection of the acting-president by faculty, students and the thoughtful people of the state—this wholly unexpected happy situation—quite arouses in some of us hopes that the Arizona Star and Tucson Citizen, the venerable David Starr Jordan and especially, the ill-mannered Harold Bell Wright—these vociferous friends (?) of the University—may now cease their frenzied rantings and give evidence of returning sanity. If everybody will get loyally behind the University it is more than likely that not the expected number of years will be required for it to regain its usefulness to the youth of the state and its standing as an educational institution throughout the country.

TRUTH ABOUT MEDICINES

NEW AND NON-OFFICIAL REMEDIES

Crotalus Antitoxin. An antitoxic serum prepared by immunizing animals against the venom of snakes of the crotalus family. Evidence has accumulated to show that the venom of certain snakes may be neutralized by the employment of a serum obtained from animals that have been injected with venom from a snake of the same family. *Crotalus antitoxin* is used to neutralize the venom injected by the bite of members of the crotalus family. The serum is administered intramuscularly, subcutaneously and in certain cases it may be administered intravenously.

Antivenin (Nearctic Crotalidae). North American Anti-Snake-Bite Serum. An anti-toxic serum prepared by injecting horses with venoms from serpents of the North American species of the family Crotalidae (Rattle Snake, 75 per cent; Copperhead, 12½ per cent; and Water Moccasin, 12½ per cent). It is claimed to have neutralizing effect against the venom of the species represented. The serum is

marketed in syringes containing 10 c.c. (a single dose). H. K. Mulford Co., Philadelphia. (Jour. A. M. A., July 2, 1927, p. 29).

Erysipelas Streptococcus Antitoxin (Lederle) Unconcentrated. An erysipelas streptococcus antitoxin (New and Nonofficial Remedies, 1927, p. 337) prepared by immunizing horses by subcutaneous injections of the toxic filtrate obtained from broth cultures of the erysipelas streptococcus, or by intravenous injection of cultures of the erysipelas streptococcus obtained from typical cases of erysipelas. It is administered in early cases of moderate severity in dosage of 12c.c. intramuscularly; in severely toxic and late cases, 36 to 48 c.c. intramuscularly, or 24 c.c. to 36 c.c. intravenously. This product is marketed in syringes containing 12 cc. Lederle Antitoxin Laboratories, New York. (Jour. A. M. A., July 30, 1927, p. 373).

PROPAGANDA FOR REFORM

Disgusting Medical Advertising. The medical profession is now being circularized with an illustration advertising presumably "Proveinase-Midy." The circular shows a disproportionate naked Hercules and a depressed naked female, whom the Hercules seems about to energize with "Proveinase." The name Midy has meant little that is inspiring to the American medical profession. Santal-Midy is sandal oil capsules that have been exploited largely by way of posters in public toilets. The advertising of "Proveinase" merits contempt and resentment. (Jour. A. M. A., July 2, 1927, p. 32).

Plasmochin. The Council on Pharmacy and Chemistry issues a preliminary report on "Plasmochin," a synthetic quinoline derivative, developed in Germany and proposed for use in the treatment of malaria. For many years attempts have been made to find a substitute for quinine that would be cheaper, less bitter, less toxic and more specific than quinine. Plasmochin appears to be a step forward in this search, though it is not a full solution of the problem of eradicating malaria. It is said to act by destroying some of the forms of the malarial parasite and by inhibiting the development of others. Those who have studied the drug appear to agree that the new drug is most effective on the quartan forms of malarial parasite, that in tertian malaria a combination of the new drug is sixty times more effective than quinine. The Council points out that results derived from the study of bird malaria have chiefly a suggestive value, and that further clinical study must be made before any optimistic estimate of its value in human beings can be formed. The Winthrop Chemical Co. has imported the drug for clinical trial and this is labelled to be "ethylaminoquinoline tannate." The firm states that the product when placed on the market in this country will be manufactured here. The Council has postponed further consideration of Plasmochin until clinical evidence concerning the efficacy, safety, and dosage of the product is available. (Jour. A. M. A., July 9, 1927, p. 113).

Limitations of Goiter Prophylaxis. Government authorities believe that there is no reason for special goiter prevention measures on the part of the state and local health departments. They do not see any necessity for universal prophylaxis such as may be attained by iodization of table salt or municipal water supplies. There is a growing opinion that the administration of iodine as a means of preventing goiter should be under the guidance of physicians and should be individualistic. In this way much good may be accomplished. (Jour. A. M. A., July 9, 1927, p. 114).

Vaccination of the New-born Against Tuberculosis With Bacillus Calmette Guérin. The history of the

vaccination of new-born infants against tuberculosis with *Bacillus Calmette Guérin* (abbreviated B. C. G.) since July 1, 1924, in France and other countries over a period of two and one-half years to Jan 1, 1927, has just been reviewed by Professor Calmette with his co-workers Guérin, Negre and A. Boquet at Pasteur Institute in Paris. The vaccine is a living tubercle bacillus of bovine origin rendered avirulent for all animals by 230 passages on bovine bile medium. For the preparation of the vaccine, the B C G organism is transferred from the bile medium to a synthetic medium, cultured, and an emulsion of bacilli prepared. 2 c.c. of the finished preparation constitutes a dose to be fed to an infant in milk. Three doses are given. A total of 43,283 children have been thus vaccinated. The various papers which are reviewed may be said to represent the culmination of the life work of a revered scientist. They may open a new era in the eradication of tuberculosis and in the knowledge of its epidemiology. For the United States, however, and for all countries it would seem wise to hold in check uncontrolled enthusiasm for its use until those charged with the responsibility of safeguarding the public have carefully proved that the method and the premises are sound. (Jour. A. M. A., July 9, 1927, p. 115).

Cactina Pillets Again. Twenty years ago preparations of *Cactus grandiflorus*—the Mexican night-blooming cereus—had considerable vogue, chiefly because of the extravagant advertising claims made for two preparations said to be derived from it—"Cactin" and "Cactina." In 1908, Sollmann thus ironically described the claims made for these preparations: "Should the heart be too slow, cactus quickens it; if the heart is too fast, cactus slows it; should the heart be too weak, cactus strengthens it; if the heart is too strong, cactus weakens it; does the heart wobble, cactus steadies it; if the heart is normal, cactus does not meddle with it." Subsequently a number of reports were published showing pharmacologically and clinically that preparations of cactus were inert. As a result of the thorough exposure of the worthlessness of cactus preparations, proprietary houses have generally abandoned their exploitation. While "Cactin" (now called "Cactoid") is still offered for sale and is still the "joker" in a proprietary morphine-scopolamine preparation, no claims for it are advanced. In the case of "Cactina Pillets," however, the proprietor—the Sultan Drug Co.—still finds it profitable to continue advertising in a certain class of so-called medical journals and to continue making the claims that have been so thoroughly disproved. To those who give credence to these advertising claims, a recent clinical study will be of interest; it reaches the conclusion that Cactina Pillets are no more than a placebo, thus agreeing with Sollmann, who twenty years ago called the preparation a psychic cardiac tonic. (Jour. A. M. A., July 9, 1927, p. 138).

Two Obesity Fakes Dodge Fraud Orders. The Post Office Department called on the Hall Chemical company, which sells the obesity preparation, Hall's Tablets Triturates—to show cause why a fraud order should not be issued against it. The proprietor of the company submitted an affidavit declaring that the sale through the mails of Hall's Tablets Triturates had been abandoned. Similarly the firm which exploits "Slends," a chewing gum coated with a mixture containing sugar and phenolphthalein, when asked why a fraud order should not be issued for selling Slends through the mails submitted an affidavit declaring that the business of selling Slends through the mails had been discontinued. There is of course, nothing in the action of either firm to prevent the sale of the products in question through the drug stores. (Jour. A. M. A., July 9, 1927, p. 138).

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The Southwestern Meeting In November

The meeting of the Medical and Surgical Association of the Southwest in El Paso, the first week in November, will be the greatest meeting ever held in the southwest district, barring none. Unique in its inception, it will present a clinical congress lasting four full days. Under the presidency of Dr. Waite, and through the indefatigable labors of Dr. Hugh Crouse, chairman of the program committee, a clinical congress and post-graduate course have been provided, to be presented by authorities in their various lines.

Papers are not being solicited from members of the Association for this meeting. The entire time will be given up to clinical instruction by authorities, any one of whom will be worth the trip to El Paso to hear. There will be the usual clinics held by the local society in the early forenoon of each day. Beginning at ten o'clock, the clinical discussion and instruction by the teachers secured for that purpose will start and continue with only luncheon intermission until five or six o'clock. The evenings will be devoted to public lectures, and such other functions as the local society may provide. The entire program will be given in next month's (September) issue of SOUTHWESTERN MEDICINE, with complete information about the lecturers, teachers and subjects to be handled. Among the men who have been definitely secured for this meeting are the following:

Dr. Frederick Allen, of New York, who will give clinical lectures on diabetes and hypertension. His work on these conditions stamps him as one of the leading authorities in the world on these subjects.

Dr. Charles Aaron, of Detroit, will lecture and give clinical talks on gastro-intestinal tract diseases.

Dr. Rudolph Matas, of New Orleans, professor of surgery at Tulane University and president of the American College of Surgeons, is expected, and will handle general surgical subjects.

Dr. William H. Park, Chief of the Bureau of Laboratories of New York, will talk on New York's experience in vaccination against diphtheria, scarlet fever and measles.

Dr. George A. Wyeth, of New York, will lecture on neoplastic diseases and the use of the radio knife and electro-thermic methods in malignancy.

Dr. Grant Eben Ward, of Baltimore, a member of the Kelly Hospital staff, will present the subject of radium in malignancy.

Dr. Harry S. Crossen, of St. Louis, will present the subject of surgery in uterine malignancy.

Senior Surgeon John McMullen, of the United States Public Health Service, will give a public talk on one evening on "Civic Righteousness and Sanitation" covering the insect transmission of disease. He is being sent especially by Surgeon General Cummins, for this meeting.

Dr. Drew Luten, of St. Louis, will discuss Instruments of Precision in Cardiac Diagnosis, making up a portion of a whole day devoted to study of heart disease, which will include Dr. Allen on Hypertension.

The full details of the program have not been worked out. The above covers only

about one-half of the number of lecturers and teachers who will give this course of instruction.

Portions of the program which have not yet been filled, but which will be completed soon include clinical lecturers on surgery of the chest; local anesthesia; general diagnosis; clinical tuberculosis; x-ray in chest diseases; x-ray in gastro-intestinal diseases; other possible subjects in the final program.

The tentative plan includes a full day devoted to study of cardiac and vascular conditions; a second day covering tuberculosis; a third day devoted to gastro-intestinal diseases; the fourth day will be given up to study of malignancy. Each of these subjects will be discussed, with clinical demonstrations, by four or five lecturers. The subjects will then be open for questions to develop points not brought out in the lectures.

Watch our next issue for full details and complete program.

A. GARFIELD SCHNABEL

(Tucson, Ariz.)

In the sudden death of Dr. A. G. Schnabel, of Tucson, on August 10, the medical profession of Pima County and of Arizona have suffered a real loss. Dr. Schnabel was forty-seven years of age, and had been located in Tucson since 1906. He graduated that year from the Cleveland Homeopathic Medical College, afterwards the Cleveland-Pulte Medical College. For a number of years he has been city health officer for Tucson and for the past four years has represented the homeopathic school on the Board of Medical Examiners.

Resolutions of respect were passed by the Pima County Medical Society at a special meeting held August 11th. The resolution praised the work of Dr. Schnabel during the twenty years he practiced in Tucson and cited his brilliant record as a medical student. It follows in full:

"The members of the Pima County Medical Society were shocked by the sudden and untimely death of their fellow member, Dr. Arthur G. Schnabel, who died Sunday night, August 7, 1927. Four months ago this society mourned the loss of its secretary and now it loses its vice president.

"Dr. Schnabel made a brilliant record as a medical student. He practiced in Tucson more than 20 years, being the second oldest physician in residence here. During this time he maintained the reputation of being an able and self-sacrificing physician. He was an enthusiast in his chosen work—rich and poor were equally the beneficiaries of his professional skill. In his specialty, obstetrics, he was very successful, enjoying a large and loyal clientele. In this line of work his reputation was more than local.

"Dr. Schnabel rendered the community and the county most valuable services as a member of the local exemption board during the war. He was untiring in his work and his board received high praise from the army authorities.

"For several years he was a member of the State Board of Medical Examiners, holding this position up to the time of his death.

"During the six years that he was city health officer he had the confidence and co-operation of the medical profession of Tucson. All his endeavors in improvement in sanitation had the support of his colleagues.

"In the early part of this year he was elected president of the staff of St. Mary's hospital.

"This community will long feel the loss of this popular and efficient public official.

W. W. WHITMORE,
ALVIN KIRMSE,
E. J. GOTTHELF,
Committee."

MALCOLM MONTGOMERY CROCKER

(Lordsburg, N. M.)

Another veteran practitioner of New Mexico passed from the stage of medical activity in the southwest, in the death of Dr. M. M. Crocker of Lordsburg, on May 17th. Dr. Crocker was born in 1864, and was sixty-three years of age at the time of his death. He was a graduate of Rush Medical College, Chicago, class of 1887, and had practiced in New Mexico since 1895. He was a member of the New Mexico Medical Society, of the Medical and Surgical Association of the Southwest. He was county health officer of Hidalgo County, and member of the staffs of the Lordsburg and De Moss hospitals. He was a veteran of the World War. The cause of death was perforated duodenal ulcer.

JOSEPH MONROE RICHMOND

(El Paso)

In the death of Dr. J. M. Richmond, the El Paso Society has lost one of its most valued members. His death occurred on August 8th, autopsy showing the cause of death to be coronary embolism. The obituary was received too late for publication this month, but will appear in the September issue.

JAMES ROBERT DAVIS

(Silver City, N. M.)

Dr. James R. Davis, a member of the Medical and Surgical Association of the Southwest, died at Silver City, N. M., on July 15. Dr. Davis was born in 1884 and was forty-two years of age at the time of his death. He was a graduate of Northwestern Medical School, Chicago, class of 1912, and was licensed to practice in New Mexico the following year. He served during the World War, and his untimely death is a distinct loss to the profession of that community.

SAMUEL CLIFFORD COX

(Fort Bayard, N. M.)

Dr. Samuel C. Cox, of Fort Bayard, N. M., a member of the staff of the Veterans Bureau Hospital, died on July 9, of heart disease. Dr. Cox was born in 1867, and was fifty-nine years of age. He was a graduate of George Washington University Medical School, Washington, class of 1892. He was a veteran of the Spanish-American and World wars. Prior to his service in the hospital at Fort Bayard, he was a member of the staff of U. S. Veterans Bureau Hospital No. 41, at New Haven, Conn.

DISEASE PREVENTION IN NEW MEXICO.

This journal has been criticized for making unfavorable comparisons between the public health activities in New Mexico and those in Arizona. It may be that the educational and publicity activities in New Mexico keep this office better informed about their work, but it has appeared, and still appears, to us that the chief difference is the organization of a public health bureau under a full time officer, with a sufficient number of full time county health officers to accomplish what is necessary in conserving the public health. Another example is the work of Dr. N. D. Frazin, full time health officer of Grant County, in suppressing an outbreak of rabies in that county. Dr. Frazin is a full-time health officer; he does not have to scratch anybody's back, nor stop to see what will be the effect of his activities on his private practice if he should hurt somebody's feelings. In his disease prevention work he hews to the line and lets the chips fall where they may. Under no other system can there be efficiency. The Weekly Bulletin of the Public Health Bureau says:

Prompt action on the part of Dr. Frazin, Grant County Health Officer, has suppressed what threatened to be a dangerous outbreak of rabies at Santa Rita. Every dog in the town is now wearing a muzzle and a tag showing that it is vaccinated against the disease. The muzzle was an additional safeguard, since an unknown number had been bitten before vaccination was begun. A large number of ownerless strays have been relieved of their earthly miseries.

When last heard from, Dr. Frazin was heading for Tyrone to hold a dog-vaccination party. All pets were to be brought to the plaza and treated at one time. Those that did not appear were to be disposed of.

This is a good piece of preventive work for which Dr. Frazin has earned the gratitude of Grant County citizens.

"Since some question has been raised as to the powers of the County Health Officer to declare quarantines in epidemics and enforce whatever regulations he may deem necessary for the public health, Dr. N. D. Frazin has secured from

District Attorney W. B. Walton an opinion under the existing state statutes, as to his authority in placing a quarantine in Grant County on all dogs as a result of the recent outbreak of rabies. Dog owners should accordingly take heed: inasmuch as failure to obey the regulations put into effect will result in prosecution in the courts." (Silver City Independent.)

GRANT COUNTY (N. M.) MEDICAL SOCIETY

The regular monthly meeting of the Grant County Medical Society was held June 24, 1927, in the Officers' Club, Fort Bayard, N. M. The Vice-President, Dr. Frazin, called the meeting to order at 8:20 p. m. in the absence of Dr. Kramer, President.

The minutes of the previous meeting were read and approved without change. Those present were: Drs. Farnsworth, Browne, Parmeter, Lacy, Donahue, Frazin, Cox, Davis, Pollak and Wood.

Clinical cases were then called for by the acting president, Dr. Frazin. Dr. Davis presented patient Sandoval. He complained of constipation alternating with diarrhea and vomiting after taking food. Plates of G. I. series were exhibited which showed filling defects of the cecum, ascending and transverse colon.

The second case was that of patient Fortner. This patient was found to have an ulceration of the cecum when appendectomy was performed last November. Plates of G. I. series were exhibited and showed filling defects from ulceration of the cecum. These patients were examined and their cases discussed by Drs. Farnsworth, Pollak, Cox and Lacy.

Dr. Wood presented patient Hammond, who is suffering from tuberculosis of both kidneys and probably of the bladder. Points of interest in the evolution and diagnosis of this case were read from the patient's chart. Patient Hammond has no tuberculosis in any other parts of his body so far as is known. Drs. Pollak, Cox and Frazin discussed the case.

Owing to the lateness of the hour, Dr. Lacy's paper on "Tuberculous Lesions of the Upper Respiratory Tract" was postponed until the next meeting.

Dr. Frazin announced that the regular meetings of the Society would not be held during the months of July and August.

The meeting adjourned at 10 p. m.

J. P. WOOD, Sec. & Treas.

EL PASO CITY-COUNTY STAFF MEETING.

At a meeting of the staff of the El Paso City-County Hospital April 20, the following cases were reported:

DR. BARRETT: The patient, a baby, began having severe coughing and fever seventeen days before admission. Three days before admission the cough became worse and convulsive seizures began. The neck became semirigid, the baby developed a moan, and there were strabismus, pharyngeal congestion, and dyspnea. There were moist rales and marked vocal fremitus over both lungs. The heart was rapid; there were no murmurs. The abdomen was distended. Cervical glands were enlarged. Reflexes were exaggerated. The rectal temperature was 104, the hemoglobin 70 per cent, the white blood count 19,500. The working diagnosis was bronchopneumonia and meningitis. Attempt at spinal puncture was unsuccessful. Since fluid could not be obtained for

confirmation of the diagnosis of meningitis, the diagnosis was changed to bronchopneumonia with meningismus. The patient died.

Dr. Richmond said that he would consider this pneumonia with pneumococcic meningitis.

DR. RICHMOND: A woman, aged 35, with enlarged, tender abdomen, full of fluid and irregular masses. No rigidity of abdomen. The patient had a cough, was emaciated. Temperature 100 pulse 108, respiration 24. There was bilateral cervical adenitis. There were increased fremitus and dullness on percussion over both lungs. There was a yellow vaginal discharge, and polyuria. The swelling of the abdomen began two months before, at which time there was pain low down on both sides. Heart negative. Tentative diagnosis: tuberculous peritonitis. The abdomen was tapped, and much straw-colored fluid obtained, after which the condition became worse. The abdomen was opened under local anesthesia. The peritoneum was very thick and bled profusely. The intestines were matted to the abdominal wall. Drain was inserted and the wound closed. The patient vomited several days before death. At the time of operation carcinoma was suspected. Section, however, showed round cell infiltration and scar-tissue. The final diagnosis was tuberculous peritonitis.

DR. VARNER: Woman, aged 33, eight months pregnant, bleeding on admission. Fetal heart sounds were heard during labor, but baby was born dead. Diagnosis: placenta praevia.

DR. BARRETT: A child was admitted with abdominal rigidity, more marked on the right side, tenderness over McBurney's point, and temperature of 101.8. On the third day there were signs of pneumonia: rales in the upper left lobe, and after a few days in the right base. Breath sounds were impaired over both lungs. X-ray examination confirmed these findings. There was some abdominal resistance and a tumor above the cecum the size of an egg. Dr. Cummins saw her in consultation and at the time of his examination he could not find the tumor. Widal test was positive. Von Pirquet test negative. White blood count 17,500. The temperature continues high, and at present goes to 102-103. The chest at present is about clear. Dr. Barrett thinks there is an impacted cecum. The mass gets smaller at times. Drs. Stevenson, Gambrell, and Armistead thought the mass very likely tuberculous.

DR. STEVENSON: A girl, aged 12, with a history of sexual relations with step-brother, was admitted with a diagnosis of pregnancy and chronic appendicitis. Four months later the patient was readmitted with the same diagnosis. The pelvic mass was larger, the temperature was 101.3, the white blood count 29,000, with 84 per cent polys. All signs of appendicitis were present. Menses had never begun. At operation the appendix was found to be large and bathed in pus. It was removed and a drain inserted. Pathologic report was acute and chronic appendicitis. The wound healed well, the abdomen became flat, and the mass disappeared. There was no pregnancy. There was possibly an ovarian abscess or an abscess in the culdesac.

L. M. SMITH, Sec'y.

The staff of the El Paso City-County Hospital met May 18, 1927, at the hospital, Dr. G. Werley, vice-chairman, presiding. The members present were: Drs. G. Werley, F. O. Barrett, F. P. Miller, Hugh Shannon, E. D. Strong, R. A. Wilson, M. E. Stev-

enson, L. A. Neil, W. R. Jamieson, Paul Gallagher, J. H. Gambrell, E. B. Thompson, T. J. McCamant, J. M. Richmond, Paul Rigney, F. M. Barnes, E. J. Cummins and L. M. Smith.

DR. THOMPSON reported a typical case of gonorrheal arthritis with a history of painful and frequent urination and urethral discharge. There was involvement of the toes and hip. The patient developed pneumonia while in the hospital, but soon recovered.

DR. THOMPSON also reported briefly several deaths which had occurred on his service during the month.

DR. WERLEY reported the case of a man, aged 52, with a history of receiving antilutetic treatment at the clinic in 1926. He had pain and shortness of breath which came on suddenly. No murmurs were heard. Blood pressure 154/80. There were signs of fluid at the right base, and after several attempts a considerable quantity of fluid was obtained. X-ray showed increased diameter of the heart. The patient died. Autopsy was not performed.

DR. WERLEY also discussed briefly the death of a patient who had a working diagnosis of mitral stenosis, this diagnosis being questioned by Dr. Werley.

DR. MILLER discussed the death of a man, 56, who was struck by an automobile. The patient was found in shock with three broken ribs. Died in 24 hours. Autopsy showed a subdural hemorrhage, but no brain damage.

DR. JAMIESON reported the case of a man who was admitted with inability to urinate, and extreme pain on the attempt. Had had pain and frequency for 10 years. The prostate was markedly hypertrophied, and there was bilateral inguinal adenitis. Blood urea 270 mgms. per 100 c. c. A permanent catheter was inserted. Cystoscopy showed a large prostate with a malignant appearance. Diagnosis: Probably carcinoma of prostate. A suprapubic cystotomy was performed, and a retention catheter inserted. The blood urea dropped 42 mgms., and the prostate was then removed. The patient died. Final diagnosis: carcinoma of prostate.

DR. JAMIESON also reported a second case of carcinoma of the prostate with fatal termination. This patient had had painful and frequent urination for two weeks, and no urination at all for three days. The bladder was palpable above the pubis. Prostate large. Blood urea 40 mgms. The prostate was removed, leaving a very hard capsule of infiltration about the cavity. Died eleven days after the operation. Section of the prostate showed carcinoma. Thrombi were found in the heart at autopsy.

DR. RIGNEY discussed the case of a man who fell on a step and fractured the left femur below the greater trochanter. An anesthetic was given, and extension apparatus and cast applied. Ulcers developed all over the leg at points of pressure. The patient died. Autopsy showed consolidation of the right lower lobe of the lung. Diagnosis: pneumonia.

DR. RIGNEY also discussed briefly several other fatalities occurring on his service during the month.

DR. MILLER, for Dr. Hugh White, presented the record of a case of cardiac decompensation with a gangrenous leg, which was amputated.

DR. RICHMOND discussed the case of a woman with a history of pain preceding menstruation,

profuse discharge, and bleeding from the cervix. The cervix presented a cauliflower appearance, bathed in a foul discharge. Tender over the pelvis. There was swelling of the left leg. Radium was applied. The patient passed grape-like masses. Diagnosis: chorionic epithelioma. Death ensued eleven days after admission.

DR. McCAMANT and DR. ARONSON presented brief records of cases which died in the hospital during April.

DR. SHANNON reported the case of a man with acute retention of urine for five days, and a history of painful urination for six months. He had not defecated for five days. Prostate was enlarged. The diagnosis was prostatic hypertrophy. Retention catheter was inserted. The patient developed signs of appendicitis, was operated, and a subacute appendicitis with many adhesions was found.

DR. SMITH reported a case of pellagra with diarrhea, typical pellagrous dermatitis, stomatitis, and advanced symptoms. The patient was put on a high protein diet and brewers' yeast. After two months of this treatment all symptoms had disappeared, and the patient was discharged and told to report at intervals for observation.

DR. RICHMOND advocated drainage thru the culdesac in cases of pelvic abscess, in addition to abdominal drainage. He stated that better results were obtained in this way. He also emphasized the advantage of removing the fundus of the uterus as well as the tubes in pus-tube cases; cases recover more quickly.

DR. GAMBRELL agreed with Dr. Richmond that fundectomy is advantageous in these cases and effects a better drainage.

DR. MILLER stated that the mortality is much lower in pelvic abscess if culdesac drainage is done before the abdominal operation, especially in acute cases.

L. M. SMITH, Sec'y.

ARIZONA DEACONESS HOSPITAL (Phoenix)

May 23, 1927.

The regular meeting of the Staff of the Arizona Deaconess Hospital was held May 23, 1927, at 8 p. m.

In the absence of the chairman of the records committee, the secretary reported upon the deaths for March and April, as follows:

Case No. 453.—Tumor of the hypophysis and hemorrhage into the fourth ventricle; came to the hospital in a terminal condition and died a few hours later. The case was autopsied; the diagnosis seems to have been made at autopsy.

Case No. 543.—Bronchial pneumonia; admitted March 22, and died on the 27th. There were very good records on this patient, as she had been in the hospital several times before.

Case No. 459.—Tuberculosis of the bladder; previously reported at staff meeting.

Case No. 744.—A six months old baby with acute gastroenteritis, secondary to an upper respiratory tract infection. This case was reported in detail in this staff meeting.

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Case No. 734.—Female, age 29. Admitted April 19 and died on the 23rd, with chronic nephritis and mitral regurgitation. Has a very fair history.

Case No. 602.—Entered the hospital April 1st and died on the 2nd, with diagnosis of anhydremia. There is a good record.

Case No. 705.—A baby five months of age with an incomplete chart. Diagnosis not recorded by the attending physician, and he has given no history or examination records of the case. The consultants left a fair record, however, to the effect that the case was an acute diarrhea, with secondary meningitis.

Case No. 533.—Female, age 25, with pulmonary tuberculosis, chronic nephritis and uremia. She was brought to the hospital in a terminal condition and died within three days. The records are good.

Case No. 455.—Male, age 43. Operated for acute gangrenous appendix. The patient had been ill two weeks before he was brought to the hospital. The operation was done, though there was slight chance of recovery. Records are good.

Case No. 725.—Female, age 33, who died from puerperal eclampsia, five days after admission to the hospital. The records are inadequate.

Case No. 640.—An immature baby; died a few hours after admission.

Case No. 402.—Male, 76 years of age, died of strangulated inguinal hernia, which was reduced on two occasions. The patient suffered considerable shock and death followed two days after admission.

Case No. 647.—Male, 47 years of age, who died of acute nephritis, one day after admission. Records are fair.

Case No. 643.—Female, age 31, who died of peritonitis, probably from septic abortion. There is no history nor records of examination by the physician.

Case No. 703.—Male, age 28, who died of acute dilatation of the heart, nine days after admission. Records are good.

Case No. 542.—Male, age 72, who died of hypertension and apoplexy, sixteen days after admission. Records are good.

Case No. 306.—Female, age 26, who died of pulmonary tuberculosis and chronic nephritis, 21 days after admission. Records are good.

Case No. 420.—Female, 40 years of age, who died of uremia following pregnancy. Records are chiefly by the interne, and are good.

Case No. 967.—Male, 27 years of age, who died of pulmonary tuberculosis, about three months after admission to the hospital. Records are good.

The main part of the program consisted of the presentation of a group of pediatric cases, all of which had been in the hospital in the past few weeks.

Case No. 712.—Presented by DR. CARSON. This was a baby nine months of age, admitted on April 18. The history says that it was a badly dehydrated baby, which had been vomiting and having many liquid bowel movements for days. The baby had previously been well except for an infected ear. The child was given intraperitoneal blood, and salt solution, and put on a low fat and high protein diet. It made an uneventful recovery and was dismissed as well, on May 10.

Case No. 820.—Presented by DR. FOURNIER. Patient was a baby boy, eight months of age; chief complaint was cough, high temperature, and loose bowels. Entered the hospital on May 4th, after about ten days illness. Previous to this illness the child had had a cold for about one week. This commenced as a rhinitis but gradually extended

downwards until it invaded his lungs. There was considerable coughing and temperature. The child was very fretful and restless. He had been having frequent green watery stools.

Physical Examination.—The child was lying in bed in a semi-conscious state. It was fairly well nourished but pale. The respirations were rapid and there was considerable cough. Head negative, tongue coated, no teeth. The tonsils were slightly injected. The abdomen was scaphoid. The liver could be felt below costal margin. Spleen and kidneys not palpable. Pulse, rapid and regular. Heart showed no adventitious sounds. Chest was barrel shaped and seemed to expand freely and evenly on both sides. The breathing was bronchial in character, and rales could be heard over the entire lungs. Percussion was negative. Urine was negative. Skin was dry and loose and showed evidence of loss of subcutaneous fat. Bones and joints were negative. Hemoglobin 76%; Leukocytes 25,400; large lymphocytes 16%; polynuclears 84%. Diagnosis was bronchial pneumonia.

Child was put to breast every three hours. It was given a cool sponge bath every three hours while temperature was high. Fluids were forced and it was given proctoclysis of three per cent glucose, fifteen drops to the minute. One c. c. of pneumococcus immunogen was given every 24 hours.

Case No. 705.—In the absence of Dr. Shupe, presented by the secretary. The records are incomplete; there is no history, nor examination

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records by the attending physician, and the first page is unsigned. This was a baby five months of age, admitted to the hospital on the 16th of April, with the diagnosis of epidemic diarrhea. The buttocks were excoriated. The leukocyte count was 17,400. The Wassermann was negative. The baby was seen by six doctors; the general conclusion was that the baby developed meningitis or encephalitis which was secondary to the intestinal infection. Before death the baby had repeated convulsions. Temperature 105½ at death.

Case No. 744.—Presented by DR. CHARVOZ. This was a baby six months of age. It had been bottle fed with cow's milk, diluted with water and malted milk, scalded before giving to the child. Two weeks prior to entrance to the hospital would cry out suddenly as if in pain. Temperature rose to 104. There is no examination record. Red cells nearly 5,000,000; leukocytes 21,200 with 40% lymphocytes and 60% polynuclears. The progress notes say that the baby had a temperature of 104, slow respiration, and the stools were green in color. The baby was discharged two weeks after admission, greatly improved. This case seems to be one of the epidemic which is so persistent here in Phoenix, and in which the prominent manifestation is enteritis.

Case No. 651.—Presented by DR. CARSON, was a baby eleven months of age, admitted to the hospital April 8 and discharged 24 hours later, in order to be taken to a hospital in Los Angeles. The records say that this is a dehydrated baby, having from seven to eight watery green bowel movements per day. It had been ill about three days before coming in. The child was given a normal

saline solution intraperitoneally and was placed on a high protein, low fat diet. It was also given glucose and insulin, hypodermatically under each breast. The child was better within 24 hours. Dr. Charvoz saw the patient in consultation and his records read, the child was pale and listless, and had dark circles under the eyes, muscles were flaccid and abdomen was soft and tympanitic throughout. The liver and spleen were normal in size; heart sounds were normal, pulse was normal and reflexes not changed. Diagnosis was fermentation diarrhea, and he concurred in the treatment recommended by Dr. Carson. The baby went to California, where it died on the 13th of April, five days after admission to our hospital. An autopsy was performed by Dr. Mona Bettin, who found an acute encephalitis to be the primary cause of death, with other essential findings as follows: hypostatic congestion of both lungs; fatty liver; congestion of kidneys; and apparently healed enteritis. Culture of the heart blood was negative.

Case No. 872.—Presented by DR. J. D. HAMER. Baby, nine months of age, which had been vomiting for several days, not able to retain water and having many watery stools. Temperature up to 105. Dr. Hamer's record is as follows: Two weeks prior to onset, child had had a severe coryza which lasted from five to six days. Then for one week child apparently had been well, until Saturday, May 7th, when mother noticed baby was very fretful, refused its food, and slept poorly. The following day, May 8th, child began having anorexia, and the small amount of food taken was vomited. The sixth day, it began having a diarrhea; color was normal but watery at first; by Wednesday, May 11, there were fifteen to twenty



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"SIMPLIFIED INFANT FEEDING"

(THIRD EDITION)

By ROGER H. DENNETT, B.S., M.D.

Professor of Diseases of Children and Director of the Department in the New York Post-Graduate Medical School; Attending Physician in the Babies' Wards of the New York Post-Graduate Hospital; Consulting Pediatrician to the Victory Memorial Hospital, Brooklyn, The Passaic General Hospital, The New York Episcopal Orphans' Home and Asylum, etc., Fellow of The New York Academy of Medicine.

"The Dietary Value of Gelatine

has long been recognized although until now, the basic reasons have been somewhat clouded by varying theories. Among the recognized protective colloids, none has a higher degree of colloidal potency than edible gelatine. It has now been conclusively established that the value of edible gelatine in infant feeding is due to its colloidal action in emulsifying the milk curds, and to the presence (to the extent of 5.9) of lysine, an amino acid which promotes growth. Similarly protective colloids in the form of albumins and gelatine are of the highest importance in maintaining an emulsion of the fats which are ingested, and in that way preventing digestive disorders that would result from non-emulsification of the fat masses. Edible gelatine is the most important member of the group of colloids, the dietary importance of which is becoming more and more appreciated by all pediatricians and food authorities. Aside from this it is of itself the most easily digested of all proteins. Working on this basis it has been demonstrated that one of the most valuable uses to which gelatine can be put is in combination with the milk

formulas in the feeding of infants. It is of value to the infant in at least two ways. In the first place, because of its powerful colloidal action, gelatine causes the casein to curd in small soft, and easily digestible curds and thus prevents the formation of the hard, tough curds which so often cause digestive disturbances and are of more or less common occurrence in infants' stools. Although gelatine may not in exceptional cases absolutely prevent the formation of curds, these indigestible masses will surely be reduced in size and softened in substance for easy digestion by the addition of a small amount of dissolved gelatine in the milk formula. Gelatine is of particular value in the diet of the growing child, because of its relatively high content of lysine, one of the amino acids necessary for growth.

"FOR infants three weeks to six months old add one-half teaspoonful of gelatine to the day's milk formula. For babies six months old and up add one teaspoonful of gelatine to the day's milk formula. First soak the gelatine for about ten minutes in one ounce of cold milk taken from the day's formula. Then add one ounce of hot milk from the day's formula. Stir until dissolved and add this solution to the full quantity of the day's formula, stirring until thoroughly mixed."

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profuse, thin, squirty, greenish, foul smelling stools per day; no blood or pus noted in stools.

From onset until day child entered hospital (May 14), the mother noted a decided loss of weight. Babe didn't take food well, and any nourishment taken was promptly evacuated. Child continued to waste, and by Friday, May 13, mother noted that child's eyes were deeply sunken, the cornea seemed to have a "scum" over it. The body was greatly emaciated, and breathing was very rapid, at times irregular and difficult. By Saturday, May 14, child seemed in a stupor, and was inattentive to all surroundings. No history of convulsions, although neck and limbs were stiff at times on May 13th and 14th. No exposure to contagious diseases, no skin rashes nor cough.

Father and mother were both well. One sister, living and well (3½ yrs.). No history of familial diseases. Mother experienced no antepartum difficulties. No exposure to tuberculosis or other diseases.

From time child was one month old, the parents have been on a tour of southern states, camping along the way. This was second child, normal birth, full term, easy labor, spontaneous respiration. Attended by a physician. Breast fed, at first every two hours, later every four hours, by mother until three and one-half months of age. Baby began to regurgitate food at intervals at this age, mother thought it wasn't getting enough to eat, so she began giving Eagle brand, three ounces every two hours, (more or less), regularly until three weeks ago, when whole cow's milk was substituted in a dilution of two ounces milk,

six ounces water, and a bit of sugar added. During present illness, mother again tried Eagle brand until a local doctor placed child on mixture of barley water, Mellen's food (dextri-maltose) and an occasional white of egg, one and half ounces every one to two hours, during the illness. It was also given two kinds of medicine, to one of which orange juice was added. For past few months child has been fed at irregular intervals, water sometimes not boiled, tomato juice, butter, crackers, bread, olive oil, and orange juice.

No pigmentations, icterus or swellings. No opisthotomos or convulsions. No cradle cap, fontanelles normal. Hearing O. K., no discharge. Eyes negative, no squint or photophobia. Nose occasionally cold. Mouth, first tooth age five months; second, five and half months; third, eight months. Throat, no swollen glands, nor sore throat, croup, hoarseness nor laryngospasm. Lungs, negative. Heart, no blueness of skin. No hematemesis, pus or bloody stools, no hernia nor tenesmus. Muscles, good tone and activity, no paralysis. Bones, no deformities, swellings nor pain.

The child died one week after admission to the hospital.

Autopsy:—Skin dry, marked emaciation and practically no subcutaneous fat. Omentum very thin. Intestines distended with gas. No evidence of peritonitis. Left lung shows no definite changes. Right lung hyperemic at base. Pericardium negative. Heart normal. Liver negative. Small intestines negative. Colon fairly diffuse coitis without ulceration. Stomach negative. Brain marked edema and hyperemia. Cause of death, anhydremia and edema of brain.

Dr. Dunn, in opening the discussion, said that he believed that these babies die from dehydration and foreign protein intoxication. For years it has been his practice to take away milk entirely, and to substitute high carbohydrate diet, usually with barley water, crackers, and tea. In extreme cases he introduces the Jute duodenal tube, by which he gives the foods and liquids. The tube may be introduced through the nose. Dr. Thomas said that he agreed with Dr. Dunn that milk should be eliminated and carbohydrates substituted. Dr. Bannister said he had had more of these seriously ill babies this year than usual, but that he had had them other years, and he believes that death results from edema of the brain caused from the excessively high temperature.

ORVILLE HARRY BROWN,
Secretary.

INTERSTATE POSTGRADUATE ASSEMBLY, Kansas City, Oct. 17 to 20.

The program of the Inter-State Post Graduate Assembly of North America, to be held at Kansas City, Mo., October 17-20, 1927, has been received. This Assembly will offer the usual high grade of diagnostic clinics by men of national repute, covering most of the specialties in medicine and surgery. This annual Assembly has become one of the notable meetings for clinical teaching and attracts a larger and larger number of visitors each year. Any one interested in seeing the complete program can secure full information from Dr. Wm. B. Peck, Managing Director of the Inter-State Post Graduate Assembly, Freeport, Ill.

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ANNUAL REPRINT OF THE REPORTS OF THE
COUNCIL ON PHARMACY AND CHEMISTRY
OF THE AMERICAN MEDICAL
ASSOCIATION FOR 1926

With comments that have appeared in The Journal. Cloth. Price, \$1.00. Pp. 73, Chicago; American Medical Association, 1927.

Reports are given on the following articles found not acceptable for New and Nonofficial Remedies: Allonal, Animasa, three benzyl benzoate preparations, Ceanothyn, Cresog, Firma Chloro, Idozan, Malt Nutrine, Murarsenide, Naftalan, Neo-Reargon, Nontox, Numoquin, Oleosolution, "Pabst Extract—The 'Best' Tonic," Phenoseptine Cones and Phenoseptine Powder, Pollen Antigen Spring Type-Lederle, Rad-X-Solution A and Rad-X-Solution B, Robes' Anti-rheumatic Injection, Sodium Methylarsenate (De Marsico), Ster-Alco, Sulcitacium, Tetradol, Thymo-Borine, Toxivi, Toxok, and Triophos. Besides these there are reports on a number of articles that have been omitted from New and Nonofficial Remedies.

The volume also contains the following special reports of current interest to physicians: a report on the status of bacillus acidophilus and bacillus bulgaricus therapy, on the basis of which the N. R. article on Lactic Acid-Producing Organisms has been revised and rewritten; a report dealing with the esteem in which antistreptococcus serum is now held by leading surgeons, gynecologists and obstetricians, prepared by Dr. Emil Novak on the basis of the answers to a questionnaire sent to representative members of these groups; and a preliminary report on the status of the new drug, Ephedrine.

New and Nonofficial Remedies, 1927, containing descriptions of the articles which stand accepted by the Council on Pharmacy and Chemistry of the American Medical Association on Jan. 1, 1927. Cloth. Price, postpaid, \$1.50. Pp. 473 XLVII. Chicago. American Medical Association

The appearance of the annual edition of New and Nonofficial Remedies is looked upon as an event among all those interested in drugs and their therapeutic use. The text is so carefully scrutinized and revised each year by the various members of the Council on Pharmacy and Chemistry that each issue is essentially a new book, a safe guide to the frontier that lies between the official drugs and the latest preparations launched by the pharmaceutical manufacturers.

Among the preparations newly admitted to the book are: Isacen, a product related to phenolphthalein; Ipral, a barbitol hypnotic; a cod liver

oil concentrate having a definite vitamin A and vitamin B potency; and three erysipelas streptococcus antitoxin preparations.

New and Nonofficial Remedies is indispensable to any physician who prescribes drugs. It contains information about medical products which cannot be found in any other publication.

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Each of these concerns brings into the new company a wealth of valuable assets in the form of good-will and confidence of the medical profession and other users of chemicals, these assets having been earned through many years of production of high quality chemicals and research work. The production of pure alkaloids was first developed by the Merck factory in Darmstadt; since the establishment of the United States branch in 1891, they have been leaders in the production of alkaloids and pure medicinal chemicals. The firm which eventually became Powers & Weightman was established in Philadelphia in 1818, and have been leaders in research chemistry since that time; among their first products were quinine and ether, and they have been among the largest manufacturers in the world of quinine, citric acid and opium preparations. The new firm will, no doubt, go far toward placing and keeping American chemical products in the lead.

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The History has been written under the supervision of a committee appointed by the Illinois State Medical Society as a commemoration of its seventy-fifth anniversary but more especially to make a living tribute to those valiant men of the medical profession who played so able a part in the exploration, settlement and development of the Illinois country.

In this first volume of the History are set down events from the earliest available knowledge of conditions in the Illinois country, along through the days of the aborigines, and commencing with the actual records when, in 1673 Father Marquette had medical attention in Chicago, up until the year 1850.

In the second volume (now in preparation), narration continues up until the present time. Future years will bring other volumes so that this history will be an ever virile monument to the men and incidents whom it would honor.

The edition is limited. It will not be reprinted. A place in every physician's library is merited by this volume, both as a tribute to the men who blazed the trail for modern scientific medicine and as everpresent reminder and authority as to what is happening to medicine right in this state every day, so far as finance, discovery, legislation and public relations are concerned, and the men who are responsible for the heritage of trust for over two centuries and a half. Volume One is now ready. Volume Two will follow soon. Orders



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may be sent to Committee on Medical History. Illinois State Medical Society—Medical & Dental Arts Building, 185 North Wabash Avenue, Chicago, Illinois, Charles J. Whalen, M. D., Chairman.

TULANE UNIVERSITY POST-GRADUATE COURSES

Tulane University of New Orleans is announcing its courses in the Graduate School of Medicine, information regarding which will be furnished upon application to the Dean, 155 Canal St., New Orleans.

This school is becoming increasingly popular among the doctors of the Southwest, for winter study.

W. B. SAUNDERS COMPANY NEW CATALOG

The publishing house of W. B. Saunders Company, Philadelphia, have issued a beautiful catalog of medical publications, describing forty-two new books and new editions. It would be profitable for any doctor to secure a copy of this catalog and see whether his library will not benefit by several new volumes. Every department of medicine is covered in this list.

ANOTHER SPECIALIST

We received a call the other day from a prominent bootlegger. On the lower left of his calling card was engraved, "Bootician."

ANATOMICAL

"Ultimately," says a critic, discussing Londoners' preference for riding instead of walking, "legs will merely be ornaments." But only some.

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PERSONALS

(ARIZONA)

DR. A. C. KINGSLEY, of Phoenix, Ariz., announces the opening of offices at 505 Goodrich Building. Dr. Kingsley, who was formerly superintendent of the State Hospital for the Insane of Arizona, will give special attention to Neurology and Psychiatry. He will, no doubt, receive a cordial welcome in Phoenix, where there is a field for such a specialist.

DR. AND MRS. VICTOR RANDOLPH, of Phoenix, left about August 1st, for study and recreation at various points of the compass. They will visit Mrs. Randolph's people in Dallas, Texas, and then will spend some weeks in Boston where Dr.

Randolph will take courses at the Massachusetts General Hospital.

DR. AND MRS. WIN WYLIE and family, of Phoenix, recently returned from a vacation of several weeks spent in the northwest and Canada. Their journey was by motor and covered several thousand miles, including most of the points of scenic interest in the northwest and western Canada.

DR. AND MRS. CHARLES S. VIVIAN, of Phoenix, left about August 1st for a vacation of some weeks, to be spent on the coast.

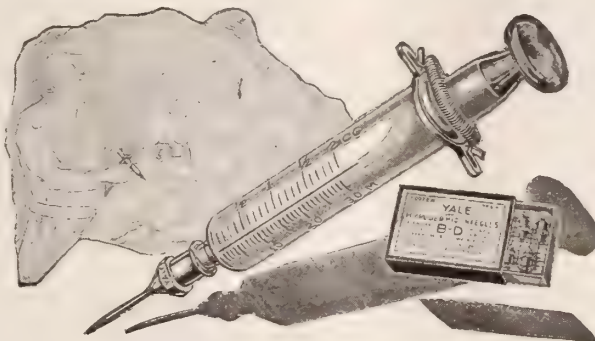
DR. AND MRS. HARLAN P. MILLS, of Phoenix, returned August 15th from their vacation spent in northern New Mexico and northern Ari-

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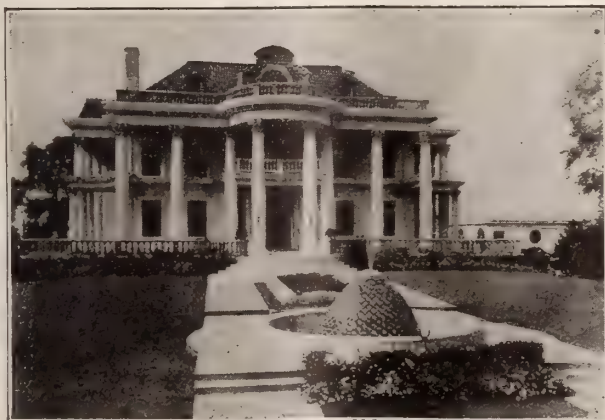
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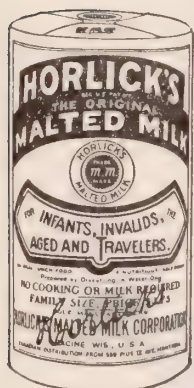
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zona. They visited the archeological ruins and historical points about Taos, Santa Fe and Albuquerque.

DR. R. J. STROUD, of Tempe, Ariz., is recuperating from a serious illness. Beginning as a streptococcic throat infection, the involvement spread to the kidneys. After a week or two in the Deaconess Hospital in Phoenix, the acute symptoms in the kidneys subsided and the doctor has gone to the coast for a period of rest and convalescence. His many friends in Arizona will hope for his speedy and complete recovery.

DR. JAMES M. GREER, of Mesa, with his family, are combining recreation with some work in the White Mountains of Arizona. Between onslaughts upon the trout streams of that region, Dr. Greer will attend to the medical and surgical needs of the inhabitants of McNary for a month.

DR. GEORGE M. BROCKWAY, of Phoenix, has returned from a six weeks' vacation spent on the coast, combining pleasure with business in connection with his work as district surgeon for the Southern Pacific and Santa Fe lines.

DR. VERNON KENNEDY, of Phoenix, was recently operated upon for acute appendicitis. Dr. Kennedy, who recently became associated with Dr. George E. Goodrich, was born in Phoenix; after receiving his education in California, he resisted many attractive opportunities to locate in that state, and answered the call of his native state and returned here to practice.

DR. M. C. COMER, surgeon in charge of eye, ear, nose and throat department, Thomas-Davis Clinic at Tucson, attended the recent annual meeting of the Pacific Coast Oto-Ophthalmological Society held at Spokane, Washington. While there he successfully stood the examination and was issued certificate by the American Board of Otolaryngology.

(EL PASO)

DR. AND MRS. W. L. BROWN and daughter, Louise, are spending the month of August in Santa Fe.

DR. J. A. RAWLINGS and family are on an extended motor trip through New Mexico and Arizona with the Grand Canyon as their destination.

DR. HARRY LEIGH has returned from a visit of several weeks to the Chicago clinics. His reason for going at this time was to make possible attending the dedication of the new Northwestern Medical School.

DR. G. WERLEY, together with his wife, DR. SWEET-WERLEY, and their young son, are on a several weeks motor vacation in the New Mexico mountains.

DR. AND MRS. W. J. DAVIS returned a few weeks ago from several months spent abroad. They visited the larger clinics of England, France and Germany but the major part of their time was spent in Vienna, where Dr. Davis took several of the courses in his specialty of eye, ear, nose and throat.

DR. S. A. SCHUSTER is home after an extended visit to the New York clinics. His work was at Bellevue and the New York Eye and Ear Hospital.

The many friends of DR. JAMES M. BRITTON will be pleased to know that he is rapidly convalescing from typhoid fever at this time.

DR. AND MRS. H. E. STEPHENSON have returned from a two weeks motor trip to San Francisco.

DR. J. W. LAWS, councilor for the El Paso district of the State Medical Association, attended a meeting of the council at Austin a few weeks ago. He later attended the North Texas District Association that met in Paris (Texas).

COL. C. M. HENDRICKS has returned from active duty as commanding officer of the medical regiment of the 90th Division which has been on maneuvers at Camp Travis.

DR. AND MRS. J. W. CATHCART are at this time on a motoring vacation through New Mexico.

DR. F. P. MILLER, president-elect of the Texas State Medical Association has completed his first official tour of the state. He addressed the North Texas District meet at Paris as well as the Dallas County Medical Society. Other cities visited by Dr. Miller were Houston and Ft. Worth, where he called upon the secretary, Dr. Holman Taylor. Mrs. Miller accompanied Dr. Miller on his tour.

DR. F. J. VICKERS of Deming was a professional visitor to El Paso the second week in August.

DR. AND MRS. W. W. WAITE and family are on an extended motor trip in their Lincoln that is taking them to many eastern points. When last heard from they had arrived on schedule and without mishap in Boston where they will remain several weeks before again starting for the Southwest.

MISS MARY BUTLER, R. N., official anesthetist at Hotel Dieu, is attending the clinics at Johns Hopkins for the next few weeks.

DR. FRANK J. MILLOY, internist for the Southwest Clinic, Phoenix, has returned from six weeks spent in the clinics of Chicago and Rochester, Minn., reviewing the work in his field.

DR. AND MRS. GEORGE M. BROCKWAY, of Phoenix, after planning a month's tour of the eastern cities, were forced to interrupt their plans at the last moment and, instead, Mrs. Brockway was placed in hospital in Los Angeles for a major operation. Dr. Brockway has returned to his practice in Phoenix, leaving Mrs. Brockway on the coast, where she is convalescing.

DR. DUDLEY FOURNIER, of the Southwest Clinic, Phoenix, has gone to the coast cities for two weeks vacation and recreation.

DR. FRED T. FAHLEN, Phoenix, State Superintendent of Public Health, is convalescing satisfactorily from his recent operation for removal of ureteral stone.

DR. C. H. OLIVER, of Glendale, Ariz., who has been taking care of the practice of Dr. R. C. Martin during the summer, will take over that location permanently. DR. MARTIN, after some special work in Chicago will locate in California.

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SEPTEMBER, 1927

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Southwestern Medicine

PUBLISHED MONTHLY

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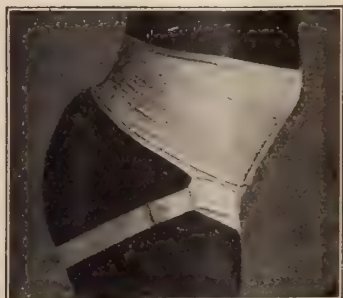
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SOME CLINICAL ASPECTS OF CON- GENITAL HEART DISEASE

G. WERLEY, M. D.,
El Paso, Texas

Read before the Forty-fifth Annual Meeting of the New Mexico Medical Society, held at Carlsbad, N. M., May 9 to 11, 1927.

Congenital heart disease is not infrequent. In our four hundred autopsies there were eight cases, two per cent. The most common clinical types are pulmonary stenosis, patency of the interventricular septum, patent foramen ovale, and patent ductus arteriosus. Aortic hypoplasia and aortic stenosis at the isthmus are included in congenital heart lesions. Other congenital defects often accompany those mentioned. Keith¹ found fourteen cases of malformed hearts in twenty-three children who had hare-lip, cleft palate, atresia of the anus, etc.

Congenital heart lesions are nearly all due to arrest of development at some point of the heart's evolution through the stages of ancestral types. A majority are due to some defect in the transformations that go on in the bulbus cordis.

It is not a question of heredity. There are many records of twins, one with a congenital heart lesion, the other normal in every way. Nor has the old age or youthfulness of the parents anything to do with it. The number of pregnancies is not a factor. The first-born is quite as likely to be a victim as is the last in a large family. There is something lacking in the child itself that prevents full growth and development, but we are totally ignorant as to its nature.

Nearly all of these children are well developed at birth, but many fail to grow, and remain small, and some age early and look senile. Fifty per cent die during the first six months.² The average life expectancy is fifteen years.³ Quite a few attain old age. A majority are cyanotic, but the degree of cyanosis has nothing to do with the prognosis. Abnormal cardiac rhythm is often present. In a baby that died on

the sixth day, in whom a widely patent foramen ovale was found at autopsy, there were paroxysms of tachycardia with a ventricular rate of three hundred and seven, the highest ever recorded. I have reported this elsewhere.⁴ It is said that congenital heart disease gives rise to some abnormal change in the electrocardiogram in 97 per cent of all cases.² In spite of this, they stand surgical operations well. In many cases the diagnosis is readily made, in others it can be determined only post mortem. Generally the symptoms and signs point to the lesions present in cases of clinical importance.

Case 1. Referred. Dr. Lee. A. H., age 16 years. Cyanotic and dyspneic since babyhood. Weight, 106 pounds. Nails are lenticular and the fingers a little clubbed. The arch of the aorta is of normal width, the border of the right heart is 4 cm. from the midline, the left is 9 cm. from the midline. The heart is too large. The liver is palpable. There is a loud systolic murmur heard all over the chest, loudest at the second left interspace. At this point there is a very definite palpable systolic thrill. The second pulmonary sound is rather faint. This is a regular text-book case of pulmonary stenosis with probably patent interventricular septum. The right ventricle is hypertrophied and the blood flow through the interventricular defect is from right to left, which accounts for the cyanosis. Other defects may be present. He lives at Clouderoft and is more comfortable there than in El Paso. This is probably due to his excess of red cells, which generally accompanies the cyanosis. He was advised not to go to a lower altitude. He gets on well in school and takes part in the usual sports.

Patent ductus arteriosus presents a very similar picture.

Case 2. F. M., age 9 years. Cyanosis slight when quiet, increases with exercise. Heart trouble first noticed at two years of age. Looks well, weighs 71 pounds and is bright and very active. Nails lenticular. The aorta is normal. The heart extends 4 cm. to the right of the midsternal line and 9 cm. to the left. Apex in the fifth space. There is a marked continuous murmur in the area of the second left interspace. The pulmonary valve closes with a loud accent, which, with the other findings, is characteristic of patent ductus arteriosus. Other congenital defects are often present and probably account for the cyanosis. A heart lesion appearing before the third year is nearly always congenital.

Case 3. This case occurred in the practice of

Dr. E. J. Cummins. Baby B, born July 8, 1922. The child, at birth, was slightly cyanotic and did not breathe well, and there was a slight crowing noise on inspiration. The baby seemed otherwise normal and well developed. On the second day the breathing was worse and the crowing inspiration could be heard at a distance. Stenotic breathing was very marked. X-ray showed increased hilus density and enlarged thymus. Dr. Frank Schuster did a laryngoscopy and found a soft fibrous epiglottis with very little cartilage. A congenital web of the larynx was looked for but was not present. The child was taken before the medical society, and was examined by many doctors, but no abnormality of the heart was noticed. The noisy respiration made satisfactory examination impossible. Death occurred at eleven months. The death certificate was signed by Dr. Craig as congenital heart disease and lobar pneumonia. I never examined the child until post mortem.

Autopsy by Dr. W. W. Waite. The heart weighs 95 gm. The pulmonary artery measures 4.5 cm.; the aorta, 3 cm.; mitral valve, 5 cm., tricuspid, 6.5. Left ventricle 7 mm. thick; right, 10 mm. Moderator band is very short and thick, 15 mm. The right ventricle is almost totally undeveloped. The infundibulum is widely dilated, wall 10 mm. Right auricle very large, wall 3 mm. Left auricle small, 1 mm. thick. Foramen ovale patent, 5 mm. Right coronary double. The right lung weighs 142 gm. The thymus is rather small. The epiglottis is very soft, and apparently has no cartilage except at the base. The glottis is small and collapsed.

This case illustrates very well that congenital heart lesions are multiple, and that other bodily defects are apt to be present. Apparently the laryngeal obstruction increased the work of the right heart, and caused hypertrophy and dilatation. However, spontaneous hypertrophy is said to occur. The cause of the stridor was probably the soft condition of the tissues about the glottis.

The two following cases involved the aorta and were reported in detail before the recent meeting of the Texas Medical Association.

Case 4. P. H., American, age 35 years. Case first came to my attention during the war in 1917. At that time I made a diagnosis of patent ductus arteriosus, which was confirmed by one of the army experts. In 1923, I made the correct diagnosis. Re-examination March 16, 1927. He is six feet in height and weighs 134 pounds. Appears vigorous and color is good. General examination reveals nothing except a left undescended testicle. Lungs negative. Liver and spleen not palpable. Thyroid not enlarged. Blood count normal, urine normal.

The cardiovascular findings are very interesting. The transversalis colli artery is easily seen and felt. The right second intercostal artery can be seen and felt pulsating near the sternal margin. Large superficial arteries are felt in the epigastric region. The radial pulses are large and strong. The blood pressure in the right arm is 156/90, in the left 150/86. No pulse can be felt in the feet, or the femoral or abdominal arteries. With the blood pressure cuff on the right thigh the mercury oscillates between 115 and 60 mm. and as the cuff is released he feels the blood coming through. In the left thigh there are no oscillations and nothing can be felt.

The heart is rather small and of the drop type.

There are no murmurs at the apex. There is a systolic murmur high up on the left. The most marked murmurs are to be heard on the back. These are very loud, systolic in time and widely distributed, loudest over the pulsating arteries about the scapulae.

A murmur in the back and absence of pulse in the lower extremities might be caused by aneurism of the descending aorta. A mediastinal tumor might possibly give a similar picture. These were excluded by x-ray. This is a typical case of congenital stenosis of the isthmus of the aorta. The diagnostic points of isthmus stenosis are:

1. Strong pulsation in the interscapular and intercostal arteries.
2. Murmurs over the scapular arteries much like those heard in the arm when taking blood pressure.
3. High blood pressure in the arms and low pressure in the legs, with corresponding pulse changes.

Isthmus stenosis is found in about one out of one thousand post mortems.⁹ Up to 1915 only twelve cases had been diagnosed in the living. King⁸ of John Hopkins has made the diagnosis in the living in four cases. One should recognize these cases without difficulty if the above facts are kept in mind.

Case 5. E. P., female, white, single, age 22 years, entered Hotel Dieu February 19, 1926, with temperature 94, pulse 50, weak and irregular, respiration 36, also irregular. She had been referred to Dr. W. L. Brown for gastric ulcer. X-ray showed no ulcer, but a very large heart.

At birth she weighed three pounds, and at three years was still as small as an average child at one year. She was small, but had good endurance until after her thirteenth year, when she grew very rapidly and became fat. Menstruation began at fourteen years. She passed the usual diseases of childhood without incident. She never had typhoid, influenza, pneumonia, rheumatism or chorea. She became very active, climbed mountains, swam and played tennis. In 1924 she had palpitation. During 1924-25, she had much pain in her stomach and vomited. When her stomach was empty she felt better. She was thought to have gall-stones. She improved, but in November she became bedfast, in which condition she came to El Paso.

She was pale, but fairly well nourished. The lips were cyanosed, the face quite swollen, no edema elsewhere. She was restless and dyspneic, but preferred to lie flat in bed without pillows. The deep reflexes were all normal. Teeth good, tonsils removed. The lungs showed good vesicular breathing everywhere. The liver was 6 cm. below the costal margin and very painful. The spleen could not be felt. Just below the right breast was a scar where a small tumor had been removed one year before. Blood pressure, 150/80. The right border of the heart was 4 cm. from the midline. The apex was in the axillary line and the impulse forceful. The arch was 5 cm. wide. Heart sounds well produced, with no murmurs or thrills. Fluoroscopic examination by Dr. C. H. Mason confirmed the physical findings. An oblique plate was negative for neoplasm.

The urine was normal except for a trace of albumin. Blood: reds, 5,600,000; hgb. 90 per cent; whites, 15,400; polys., 67; small mono., 23; large mono., 10.

An electrocardiogram, March 31, 1926, showed very low complexes in all three leads, right ventricular preponderance, inverted T in leads I and II, spreading and notching of the Q. R. S., and sinus arrhythmia. At this time the general edema failed to respond to digitalis, theocin or novasurol.

The pulse remained slow throughout and was always small and difficult to count, while the blood pressure was high, and the heart action forceful. The temperature ranged from subnormal to 101 per rectum. Pain in the stomach, vomiting, and distention of the veins of the neck and arms were prominent symptoms. She died very suddenly, April 5th, 1926.

Post mortem by Dr. W. W. Waite: Liver somewhat large. Spleen about three times normal size. Heart markedly enlarged and dilated particularly the left ventricle. It weighed 395 gm. The left ventricle was irregular in thickness and the thin parts contained much fibrous tissue. The pulmonary artery measured 7 cm.; the aorta, 5.5 cm. at its origin. The thoracic aorta measured 3.5 cm.; the innominate, 2 cm.; and the internal carotids and subclavians, 1.5 cm.

The kidneys seemed quite normal. The walls of the stomach were markedly injected.

Sections of the left ventricle showed marked increase of fibroid tissue replacing the muscle cells. The remaining muscle cells were hypertrophied, and there were several islands of round cell infiltration. Kidneys showed congestion only. The liver was fatty. The stomach showed a good deal of round cell infiltration.

In this case the innominate measures .5 cm. less than in Burke's⁶ second case, and the thoracic aorta was almost .5 cm. narrower than was found in any of Aschoff's⁷ one hundred and seventy-six cases of similar age killed during the war.

In deciding whether an aorta is hypoplastic one must consider the age, occupation, and general development of the individual. Aortas vary in size, just as hearts do. Virchow pointed out that in chlorosis the aorta may be hypoplastic. We recently had a post mortem in which it was associated with persistent thymus. It is said to occur in pernicious anemia, hemophilia, and purpura hemorrhagica. Small aortas are found in tuberculosis along with small hearts, due to the general tissue waste.

Congenital aortic hypoplasia is likely to be associated with other anomalies. In congenital aortic hypoplasia the vascular system is inert. It does not respond to the stimuli to development, and such individuals break down and die in early life, due to an inadequate circulation. The poor blood supply to the kidneys lowers resistance, and nephritis may occur. Chiaruttini⁸ reported ten such cases with autopsy findings. I have seen such a case in a boy of sixteen years in whom high blood pressure and disability preceded the nephritis.

The diagnostic points of aortic hypoplasia are:

1. High blood pressure not otherwise explainable in a young person.
2. Small, feeble pulse in spite of apparently good heart action.
3. Narrow aorta by percussion and x-ray.
4. Heart failure in early life in the absence of the usual causes.

In our case, the uncertainty as to the nature of the tumor on the chest was confusing, because we have had a case in a post mortem, of metastasis of sarcoma to the right ventricle, with heart failure and passive congestion. So our ante mortem diagnosis was malignancy or congenital heart disease. The leukocytes and round cell infiltration show that some infective process was going on, a common occurrence in these cases. All the symptoms can be accounted for on the theory of circulatory failure. Pain about the stomach is common in heart disease, as in angina pectoris, cardiac infarct and heart failure with passive congestion.

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DISCUSSION

DR. C. M. YATER, Roswell, N. M. (opening): I hate to see such a fine paper go by without discussion and feel that perhaps many of those present may feel as we did at Roswell and wonder what the different terms really mean. At Roswell, at the society meetings, when case reports along this line were studied, the boys were completely at sea, so far as the meaning of the different waves were concerned—in other words, they were knocked over by the P wave, swept off their feet by the Q. R. and S. waves, literally swamped by the T wave and later sunk by the inverted T wave. Now I am sure that many of us present, including myself, would like further information as to the meaning of those terms and we should like to know in plain English just what they mean.

DR. G. WERLEY, El Paso (closing): While the different waves in the electrocardiogram may appear difficult to understand, they are generally really very simple and very easy to read after you have had a little experience. To anyone interested, I would recommend the study of Lewis's small book on the Electrocardiogram, published by C. V. Mosby Company, St. Louis. A few weeks' study should enable anyone to understand most electrocardiograms.

NON-CALCULOUS URETERAL OBSTRUCTION

K. D. LYNCH, M. D.,
El Paso, Texas.

Read before the Forty-Fifth Annual Meeting, New Mexico Medical Society, Carlsbad, New Mexico, May 9 to 11, 1927.

The purpose of this paper is to demonstrate graphically certain conditions which are met with in the ureter; which may produce symptoms simulating exactly a typical reno-ureteral colic due to stone; which may result in very serious organic changes in the kidney and ureter unless proper treatment is instituted early in the disease.

We wish to acquaint the profession at large with the knowledge of these obstructions other than stone; that they are of frequent occurrence; that, when the ordinary methods of diagnosis at their disposal fail to reveal a definite cause for the symptoms, an expert urological examination should be made, instead of waiting for the passage of a stone that does not show in the radiogram or considering that a small stone has passed without being recovered.

We do not desire to make a tiresome argument anent the relative frequency of true organic ureteral stricture as compared to constrictions from spasms, adhesions, and pressure. The main idea is that obstruction of the ureter from any cause may produce symptoms of stone and also result in very serious damage, ultimately, to the kidney, especially if there is a complicating infection. However, we do think it of value to determine as accurately as may be, the actual type of obstruction; for this has a definite bearing on the proper treatment to be applied.

Many of the conditions may be combined or overlap. We have arranged the cases in a somewhat arbitrary grouping as follows:

(1) Kinks and twists, including those due to ptosis of the kidney. In this latter condition we believe the production of the kink or twist in the ureter is of more importance than the degree of ptosis, and it usually happens because the ureter is fixed at some point by adhesions.

(2) Organic strictures, where there is a real infiltration of the ureteral wall.

(3) Pressure obstruction; bands of adhesions, pregnant uterus, aberrant vessels.

(4) Pressure or obstruction due to anomalies of the kidney or ureter itself.

The following cases have been selected from a much greater number, and will suffice to illustrate the conditions mentioned:

Case 1. Mrs. N., 25 years. Severe typical renal colics with typical radiation; no blood in urine; nausea and vomiting during attacks.

Case 2. Mrs. P., Dull aching colicky pain in right kidney, associated with nausea; ptosis traumatic in origin. 35 years of age.

Case 3. Mrs. M., 65 years. Severe attacks right sided colic; blood in urine, pus.

Case 4. Mr. D., 60 years. Sent in with stone diagnosis; typical attacks.

Case 5. Mrs. N., 51 years. Severe typical colics, right side; relief complete by suspension operation.

Case 6. Mrs. F., 55 years. Periodic colics; kidney infected; colics relieved when infection eradicated.

Case 7. Mrs. L., 50 years. Typical colics; no blood in urine.

Case 8. Mrs. M., 38 years. Pounding pain over right kidney; only when arises in morning; no blood in urine, no nausea or vomit.

Case 9. Mr. A., 39 years. Dull ache in right kidney, microscopic blood in urine, no pus. Relieved by dilatation.

Case 10. Mr. G., 47 years. Two stone (?) attacks 8 years ago; stones not seen. Dull aching pain over right kidney.

Case 11. Mrs. H., 28 years. Severe colics every five days for four months; x-ray negative for stone; kidney infected.

Case 12. Miss T., 15 years. Nausea; pyuria. Kidney severely damaged by the infection and obstruction. Operation to relieve strictures due to bands of adhesions; trying to get infection eliminated.

Case 13. Mrs. S., 40 years. Pain and soreness over right kidney; operated for ptosis of kidney 14 years before. Kidney infected.

Case 14. Mrs. M., 38 years. Knifelike pain, left kidney radiating to groin; pus in urine; probably has double ureter; cannot enter opening central to patent one.

Case 15. Mrs. B., 36 years. Kidney pain referred down thigh and leg; intense blinding headache during attack.

Case 16. Mrs. B., 34 years. Operated for ptosis of kidney some years ago. Still has pain as before operation, radiating around from kidney.

Case 17. Mrs. B., 26 years. Referred for treatment of pyelitis after labor; renal colic with nausea; infection not found.

Case 18. Mr. L., 36 years. Referred for tuberculosis of kidney; repeated attacks of renal colic, hematuria. Is case of twist plus colon infection.

Case 19. Mrs. McC., 34 years. Severe kidney infection necessitating removal; twist adjacent to pelvic brim caused by dense band across ureter.

Case 20. Mrs. S., Paroxysms of kidney colic every two weeks; nausea and vomiting. Referred as case of stone; is case of true organic stricture combined with kinking due to bands of adhesions. The organic stricture was dilated from inside pelvis. Complete relief of symptoms.

Case 21. Mr. L., 21 years. True organic strictures with infection of kidney resulting in destruction of kidney through neglect; severe pain. Kidney was removed.

Case 22. Mrs. H., 35 years. Upper part of kidney with double pelvis is a large pyonephrosis due to stricture of upper pelvis; renal colic very severe when drainage was faulty. Kidney removed.

Case 23. Mr. P., 56 years. Dull aching pain left lower quadrant; organic stricture without infection; relieved by maintaining dilation of 4 F.

Case 24. Mrs. R., 48 years. Paroxysmal pain right kidney, nausea. Relief by dilatation.

Case 25. Mrs. S., 42 years. Hematuria, renal colic about once a week; typical radiation. No stone; dense stricture uretero-pelvic juncture; leukoplakia of kidney.

Case 26. Mr. M., 42 years. Dull kidney ache relieved by dilatation of stricture in upper ureter.

Case 27. Mr. McM., Severe chronic infection of kid-

neys maintained by hard strictures, lower ureters; dilatation and lavage eliminated kidney infection.

Case 28. Dr. H., 48 years. Trauma to left kidney many years before; infection some years later; gradual progressive destruction of kidney due to obstruction and infection. Right kidney shows possible aberrant vessel pressure.

Case 29. Mr. C., 28 years. Stricture lower ureter due to periureteral changes, probably caused by amebic dysentery.

Case 30. Mrs. H., Pain in right kidney; no stone; stricture plus infection, alone.

Case 31. Mrs. S., 28 years. Recurrent attack of pyelitis; recurrent colic. Slight ptosis combined with strictures near pelvis.

Case 32. Mr. I., 40 years. Dull aching soreness over left kidney radiating around to front and to groin; probably has pressure by band of tissue across uretero-pelvic area; possibly is constriction by vessel; dilatation has relieved completely.

Case 33. Mr. R., 27 years. Knifelike pain, left kidney, radiating to groin; severe hematuria. Band pressure across pelvis and upper ureter.

Case 34. Mr. H., Attacks of pain along right ureter, very severe; has a peculiar dilated area in middle ureter; no obstruction to passage of catheter; no stone shadow. Appendix was removed without relief.

Case 35. Mr. P., Pain over left kidney very severe; kidney freed and twist of ureter and pelvis loosed; upper ureter adherent to kidney was also freed; is probably case of nephralgia.

Case 36. Mrs. C., 25 years. Four months pregnant. Two very severe renal colics. Kidney infected but gradually got well. No stone.

Case 37. Mrs. W., 28 years. Seven months pregnant. Shows fairly typical picture of infection of kidney in pregnancy and the damage done to kidney by the obstruction due to kinking of the ureter and by outside pressure.

Case 38. Mrs. S., Colicky pain in right side over kidney; hematuria; the pressure defect at uretero-pelvic juncture was diagnosed as due to aberrant blood vessel obstruction and confirmed at operation. Symptoms have been entirely relieved.

Case 39. Mrs. N., 24 years. Pain along right ureter. Urinary findings normal. Obstruction in pelvis due to aberrant vessel and relieved by operation.

Case 40. Mrs. N., 51 years. Same case as No. 5. One year after operation on right kidney patient had very severe colic in left kidney. Radiograms show small stone but a dilated obstructed pelvis, which was diagnosed as due to aberrant vessel pressure, from its typical configuration. At operation, dense mass of vessels found wrapped around pelvis and ureter; stone also removed.

Case 41. Mrs. S., 65 years. Pain in left iliac area; treated for colitis. Diagnosed as fused (horseshoe) kidney, with pyonephrosis of left half due to infection plus pressure on ureter which, in this case, ran behind the isthmus. Resection and removal of left was successfully accomplished.

Case 42. Mr. O., 31 years. Pain in epigastrium; urinary findings normal. Diagnosed fused kidney with hydronephrosis of right half; the right kidney was removed successfully; its pelvis and ureter were bent over its face at an acute angle, producing pressure. The ureter of the left kidney ran down behind the fused mass and apparently was not obstructed.

Case 43. Miss R. Referred with diagnosis of stone and infection; at operation a true double kidney was removed, the upper kidney not having been injected.

Case 44. Mrs. C., 32 years. Severe renal colic, left side; has complete double ureter, right side, but no pain; on left, ureter is forked and colic occurs at point of forking; dilatation relieved the symptoms.

Case 45. Mrs. D., 28 years. Pain along right ureter; had infection of right kidney.

Case 46. Mr. M., 45 years. Hematuria; mild pain along right ureter only occasionally; double ureter complete on right side.

There is no criticism intended, or implied, of the diagnosis of stone attached to so many of these cases when they are referred; it is the best possible tentative diagnosis according to the symptoms, and has been concurred in by us until the complete evidence forced us to other conclusions. Moreover, the inference is plain, on the other hand, that my colleagues in the Southwest who have done me the kindness to refer these cases, are keenly alive to the necessity of accurate diagnosis before definite treatment—operative or otherwise—is advised; we have only high praise for their unselfish spirit which has held the patient's interest above all other considerations.

DISCUSSION

DR. P. G. CORNISH, JR., Albuquerque, (opening): We have just seen a very interesting set of slides, which have well demonstrated the points brought out by Dr. Lynch, and illustrate how easily mistakes may be made in the diagnosis of abdominal pain, without more complete diagnostic measures in the way of pyelograms and attention to the ureters and kidneys. I think that we see this quite often, particularly with reference to the appendix.

Dr. Lynch spoke of a number of cases where the appendix had been removed without relief of symptoms, where, if more thorough diagnosis had been made with respect to the ureter and kidneys, the appendix would not have been taken out and a condition created with an added abdominal operation.

This is one of the things we try to avoid in our work—making a diagnosis of chronic appendicitis. Cases under that diagnosis are almost always operated upon and we try not to make that diagnosis without first taking complete measures to assure us that such a diagnosis is the correct one.

I agree with Dr. Lynch, that kidney colic is very frequently mistaken for something else, and is treated as something else.

DR. H. A. INGALLS., Roswell, N. M.: I should like to have Dr. Lynch explain to us when we have a definite stricture. He tells us that obstruction of the ureter from any cause may produce symptoms of stone and what I should like to hear is just when there is a definite stricture.

DR. K. D. LYNCH, El Paso (closing): I thank you for your kind attention and discussion. In regard to Dr. Ingall's question, that is just one of the points I mentioned in one of my cases. Dr. Duncan wanted to know the same thing. In certain cases you can give plausible reasons for it. You can say we know that in stricture of the ureter, a man may not get any signs of the trouble for along time, yet let him take a few drinks of liquor and he may at once get into a jam. It may be the same way in regard to other strictures—there may be certain factors that irritate it.

We had a very interesting case from Dr. Ingalls some weeks ago. Apparently the x-ray showed a definite stone shadow in the kidney. We were going to make mighty sure of what we had before we did anything with the case, so we checked over our findings with the x-ray and could not locate the shadow at all, and concluded it was a case of aberrant blood-vessel obstruction. Now, I expect Dr. Ingalls is going to explain that we were not so good, and after awhile he is going to find the stone again, but I must say that I could not

determine a stone at all, despite the x-ray, and feel sure that a blood-vessel caused that shadow; in fact, we found it and divided it at operation.

Just before we left El Paso, we had a case for Dr. Felix Miller—one of his railroad men. Dr. Miller made the diagnosis, definitely, of kidney stone, and called me out to see the man. We could not find a stone or definite stricture and I do not know what was the matter with him.

A few days before we left El Paso, Dr. Sexton sent down a case from Las Cruces. We put him under examination and found we could not get into the left ureter; we could only get the tip of the catheter in. We already had deeply injected the left kidney, and he did not have a bit of a stone anywhere in the ureteral tract, but he did have a stricture. He had had two attacks of colic—one a week before and the other a day before he was sent to us. He had to have a tremendous amount of treatment to get over them. When I made a pyelogram of that kidney and analyzed the urine, the urine of the right kidney was normal, urine of the left kidney had pus. The man had had that condition a very long time, though he never had the colic except just a week before he was sent to us. The stricture was not one of recent development, nor was the amount of destruction in the kidney recent. I cannot say why these attacks occur paroxysmally—they just do.

I showed you a case where we did a plastic operation. Those attacks were paroxysmal, but were far apart at first, until, finally, an attack took place every week, whereas before, they occurred practically every two months. The other case I showed you had them every five days, at a definite hour in the morning, beginning at such and such a time. There are certain factors you may advance to explain these attacks, but you cannot be sure of them. I admit I do not know why they come paroxysmally. You can have a stone in the ureter and it might lie there quiescent for a long time. Some of them do not cause any kidney colic until they get down close to the bladder; then they begin to cause a colic, but not continuously; it is only when the stone shifts its position that it starts to produce a spasm and the ureter gets a complete obstruction. I saw one case that had the right kidney removed with several stones in it and was again having colics on the left side. I recall one case—that of a doctor's secretary—who had been operated for definite acute appendicitis; had never had any symptoms in the kidneys. After the operation, she began to develop intense pain. She had two definite strictures adjacent to the appendix area. She stays well as long as the strictures stay dilated. When you get them to that point, they come in only at intervals. She comes in, possibly, from nine to twelve months, to be dilated, and stays comparatively comfortable. Some persons have to come in oftener.

As I mentioned in my paper, I do not want to be understood as offering any criticism of the general surgeon or others who diagnose these cases as renal stone. What I am trying to do is to show that there are other conditions in the ureteral tract which can cause these conditions. The kidney is a very vital organ—you cannot do without your kidney. You can take out a good portion of them, but you cannot do without them entirely. The thing to do is to get the cases early, when the symptoms first start, and possibly things can be done in the way of prevention of kidney destruction.

Some of these cases that have been referred to me were cases sent by surgeons, with definite

acute appendicitis attacks. One case had been sent to Dr. W. L. Brown—a woman, pregnant, sent in as acute appendicitis. Dr. Brown examined the case and sent her over to me. The inference is certainly obvious that we never would have had all these cases if the men in the Southwest had not been alive to the necessity of accurate diagnosis before definite treatment.

In the case sent by Dr. Ingalls, he sensed in a way that there was something peculiar about it and he sent it to me to see if I could find out definitely. So, as I say, the paper is not a criticism of the men who make their diagnoses in these cases—it is more of a commendation. While there have been 48 slides shown, I could just as easily have shown 200. My difficulty has been to trim my paper down to where it was presentable and show you the more typical types.

I thank you very much for your attention.

HILUM TUBERCULOSIS IN ADULTS

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Albuquerque, N. M.

Read before the New Mexico Medical Society, at its Forty-fifth Annual Session at Carlsbad, N. M., May 9 to 11, 1927.

Hilum tuberculosis, or tuberculous disease limited mainly to the tracheobronchial lymph-nodes, has, for some time, been considered the classical type of thoracic tuberculosis in childhood. At a meeting of the American Sanatorium Association, December, 1922, the term "hilum tuberculosis" was adopted by the Association as indicating a definite disease entity in children. If we exclude bone, joint and meningeal tuberculosis, probably the majority of tuberculosis morbidity in childhood is centered in the tracheobronchial lymph-nodes.

While hilum tuberculosis of childhood has been widely discussed, little has been said about its occurrence as a type of tuberculous morbidity in the adult. In fact, most writers dismiss it casually with the remark that hilum tuberculosis in the adult is rare. There is no essential anatomical or physiological difference between the tracheobronchial lymph-nodes of the child and the adult. It is easily conceivable that an arrested hilum infection, acquired in childhood, might become reactivated and produce disease symptoms in the adult without necessarily extending into the lung areas. It is my impression, contrary to the usual teaching, that this condition in the adult is relatively frequent. The diagnosis of hilum tuberculosis in children is considered, by most clinicians, a difficult one to substantiate and it is doubly so in adults, with their more numerous and complicated ailments. The physical signs and x-ray findings are often indefinite or inconclusive, and the diagnosis must be made mainly on symptoms. Every other possible focus or infection must be investigated and its presence excluded. The symptomatol-

ogy varies widely, but certain features occur more or less constantly.

ONSET AND DURATION

The onset is usually insidious and seldom can a definite date be assigned as the beginning of ill-health. The duration is also indefinite, many cases lasting for years. It is essentially a slow, smoldering infection, subject to periods of remission and exacerbation. The long duration without perceptible progress is a characteristic feature. Most cases eventually recover, after months or years, though a small percentage later develop frank pulmonary tuberculosis.

AGE AND SEX INCIDENCE

Hilum tuberculosis of adults usually manifests itself before the age of thirty-five. In a series of fifty cases from my records, twenty-three occurred in the decade from 15 to 25 years of age; seventeen from 25 to 35; eight from 35 to 45; two from 45 to 50. A total of eighty per cent, occurring before 35 years of age. It is apparently more frequent in females than in males. Whether this is because the more highly sensitive nervous system of females causes them to react to slighter toxemias than males, is only a matter of conjecture. Certainly the psychoneurotic disturbances associated with this condition seem more prominent in women than in men.

SYMPTOMS

(1) **Fatigue** is the universal symptom. It is variously expressed by patients, as: "being tired all the time;" "being below par, physically;" "lack of endurance;" "lack of usual energy," etc. It varies in intensity from mere languor to a feeling of extreme weakness. Fatigue symptoms in some form are presented by practically all cases.

(2) **Fever.** A low-grade fever of 99 plus is usually present. The temperature is ordinarily higher in the afternoon or evening, and is frequently subnormal in the morning. The daily elevation of temperature may continue for many months or years, though periods of remission may occur. A few cases that present all the other characteristic features have a persistently sub-normal temperature.

(3) **Tachycardia.** A rapid pulse is usually present even when at rest. It is readily increased by slight exercise or excitement and is always of a higher rate than the slight fever would warrant.

(4) **Shortness of breath** on slight exertion is a frequent symptom. It is usually associated with tachycardia, but may appear independently.

(5) **Cough** may or may not be present.

It is usually a dry hacking cough, distinctly bronchial in type. Occasionally there is a clear mucoid expectoration. The cough of hilum tuberculosis has been described as having a peculiar brassy, croupy character, but this was not noted in any case of the series mentioned.

(6) **Loss of weight** is a frequent feature, but is seldom excessive. Most patients are of the spare, thin type, but many are well-nourished and plump.

(7) **Chest pains** of various kinds are a common complaint. It is most frequently described as a dull, heavy pain, as from pressure, beneath the sternum or between the scapulae. There may be also sharp pains of a pleuritic type in various parts of the chest or shoulders, and occasionally a definite, dry pleurisy can be made out.

(8) **Nervous symptoms** are present in the majority of cases, and frequently they are the outstanding feature. The patients are usually emotional, easily excited, and prone to be hysterical or hypochondriacal. There seems to be a general mental and nervous instability, similar to that seen during the menopause. The symptoms most frequently mentioned are restlessness, tremors, muscle cramps and insomnia, etc.

(9) **Frequent colds.** A marked susceptibility to acute respiratory infections is often noted. Head colds, sore throats and bronchitis are frequent complaints. Many patients state they have colds all winter long, and to this attribute their ill-health.

(10) **Night sweats** are mentioned as a symptom of hilum tuberculosis by most writers on the subject. It may be common in children, but is rare with this disease in adults. In the series of fifty cases studied, it was mentioned as a symptom by only three, and in these it was of doubtful authenticity.

(11) **Hemoptysis.** Expectoration of blood is a relatively common symptom. It is seldom excessive, usually being not more than blood-streaked sputum. In the series of cases mentioned, no severe hemoptysis occurred, but spitting of blood was given as a symptom in thirteen of the fifty cases.

PHYSICAL SIGNS

The physical findings of hilum tuberculosis have mostly been developed in the observation of this disease in children and there is a wide diversity of opinion as to their relative value in diagnosis. It must be understood that the physical findings suggestive of hilum tuberculosis in the adult, give no indication of the activity of the disease. The signs may be just as marked in an old, healed lesion, as in a recent, active one, and the question of wheth-

er or not the suspected glands are actively diseased must be determined from the clinical history.

Fetterholf and Giddings have attempted to show, by a study of sections of the frozen thorax, that the tracheobronchial lymph-nodes are so deeply located within the chest that only massive enlargements of these glands could produce signs on the surface. It is probable that the physical signs of this condition are not due entirely to changes in size of the glands, but are produced mostly by the accompanying inflammation and lymphatic engorgement of the surrounding tissue.

The signs usually considered indicative of hilum tuberculosis are:

- (1) Para-vertebral dullness.
- (2) Spinal dullness.
- (3) The D'Espine sign.
- (4) Para-sternal dullness.
- (5) The Eustace Smith sign.
- (6) Bilateral narrowing of Kronig's isthmus.
- (7) The hilum dimple.
- (8) Enlarged chest veins.
- (9) Edema of the neck.

1. **Para-vertebral dullness.** There is normally an area of lessened resonance between the scapulae, extending laterally on either side of the spine, from about the level of the third to the sixth dorsal vertebra. With enlargement of the tracheo-bronchial glands this area may become more dull to percussion and increased in width. This increase of para-vertebral dullness may be bilateral, but is usually wider on one side than the other—more frequently on the right.

2. **Spinal dullness.** The thoracic spine is normally resonant to percussion from the seventh cervical downward. In hilum tuberculosis there is frequently a strip of comparative dullness from about the third to sixth vertebra. Spinal dullness is usually associated with para-vertebral dullness, as both are due to increased density of the contents of the posterior mediastinum.

3. **D'Espine's sign**—or the conduction of the whispered voice sounds down the thoracic spine to the level of the sixth vertebral spine or below, is frequently connected with para-vertebral and spinal dullness. It, also, is due to the increased density of the posterior mediastinum, which gives better sound conduction between the trachea and the spinal column. It is my observation that these three signs, para-vertebral dullness, spinal dullness and D'Espine's sign, are the most constant physical findings in hilum tuberculosis in adults. At

least two of these signs were present in every case of the series mentioned.

4. **Para-sternal dullness,** similar to the para-vertebral dullness, is frequently mentioned as a sign of hilum tuberculosis. As the tracheobronchial glands are mostly located in the posterior mediastinum, they can give but little change in the percussion note anteriorly, unless grossly enlarged. The sign has been of little help to me, and was not noted in any of the cases in the series studied.

5. **The Eustace Smith sign** is described as a venous hum at the root of the neck when the head is sharply bent backwards. It is, presumably, due to pressure of the enlarged glands on the mediastinal blood vessels. It is normally found in children with thick, fat necks, and in some adults. This sign is rather rare in adults, and I do not regard it of much diagnostic significance.

6. **Bilateral narrowing of Kronig's isthmus** has been mentioned as a sign of hilum tuberculosis. The width of the "shoulder strap" area of resonance varies considerably in different types of chests and it is difficult to determine whether narrow isthmuses are normal to the individual or due to apical retraction. If a narrowing of the resonant area were due to bronchial stenosis from pressure of enlarged glands, it would be more apt to be unilateral than bilateral. This sign cannot be of much value in attempting to diagnose hilum tuberculosis.

7. **The hilum dimple** is a retraction of the second interspace near the sternum on deep inspiration. It is probably due to mediastinal adhesions. It is seen normally in some persons with thin chest walls, and those in whom the angle of Louis is prominent. In children this sign may be of value, but it has but little significance in adults.

8. **Enlarged chest veins.** An engorgement of the superficial veins of the chest, neck and abdomen, may result from pressure within the mediastinum. It is a common sign with the enlarged tracheobronchial glands of Hodgkin's disease, or malignant tumors involving the mediastinum. It is rare in hilum tuberculosis, as the glands seldom are large enough to cause sufficient pressure.

9. **Edema of the neck.** The so-called "Stokes collar" is a peculiar soft swelling, not pitting on pressure, and usually having cyanosis of the overlying skin. Like the enlarged chest veins, it is a pressure symp-

tom due to massive enlargement, and is rare in hilum tuberculosis in adults.

X-RAY FINDINGS

There are no definite x-ray findings of hilum tuberculosis in the adult. The hilum shadows show some increase in size and density, and there may be some increase of bronchial markings, and calcareous lymph glands may be seen. This picture does not necessarily indicate active disease, as it is frequently found in persons with healed tuberculosis, who are in perfect health. Increased hilum shadows mean only that an infection in that region has occurred, but it is impossible to tell from the x-ray evidence whether the infection is old and healed, or recent and active. Other diseases, such as acute respiratory infections, measles, whooping-cough, etc., may cause enlargement of the tracheobronchial lymph glands which cannot be distinguished from that of tuberculosis. The main value of the x-ray in the diagnosis of hilum tuberculosis is to exclude other conditions, such as tuberculosis of the lung proper, mediastinal tumors, etc.

TUBERCULIN TESTS

The various tuberculin tests are notoriously unreliable. It has been the usual belief that a positive tuberculin reaction was indicative of tuberculosis somewhere in the body. However, a hypersensitiveness to tuberculin does not necessarily mean active tuberculosis, while many known cases of tuberculosis give a negative reaction. In the presence of a clinical history and physical signs suggestive of hilum tuberculosis, a positive tuberculin reaction may be suggestive, but does not necessarily corroborate the diagnosis.

COMPLEMENT FIXATION FOR TUBERCULOSIS

The same remarks as regarding the various tuberculin tests, can be made of the complement fixation test, namely, that it is unreliable. Some observers believe that the intensity of the complement fixation reaction gives some information as to the activity of the supposed tuberculous lesion; but this has not been borne out by my experience.

SUMMARY

1. Tuberculosis limited mainly to the tracheobronchial lymph-nodes is a definite cause of disease in adults, as it is in children.

2. The diagnosis is a difficult one to substantiate, as it rests mainly on symptoms.

3. Physical signs and x-ray findings are corroborative, but give no information as to the activity of the lesions.

4. Hilum tuberculosis in adults is a rel-

atively frequent cause of semi-invalidism, and deserves more consideration than is usually given.

DISCUSSION

DR. F. D. VICKERS Deming, N. M.: A very important bearing on this subject of hilum tuberculosis is being worked out by Krause and others—showing the guinea pig has almost no intra-pulmonary lymphatic tissue, with marked tracheobronchial nodes; that primary infection is carried to lungs by air, or by blood stream; that bacteria settle in periphery in sub-divisions of lungs, and are carried by ample lymphatic channels, unobstructed by much lymphatic tissue, to glands of hilum; that glands react and enlarge.

The rabbit has intra-pulmonary lymphatic tissue and very few lymphatic glands at hilum and, unlike the guinea pig, develops pulmonary tuberculosis with little tuberculous gland infection, because the tubercle bacilli are arrested by the intra-pulmonary lymphatic tissue.

Child, like guinea pig, has very little intra-pulmonary lymphatic tissue, and has free drainage from lung tissue to glands of hilum, which arrest the bacilli. Later in life, due to irritation from dust, to bacteria, etc., the pulmonary lymphatic tissue has tendency to develop in lung, the bacilli are settled in this lymphatic tissue, and there is also, after the primary infection, allergic response, an exaggerated tissue response to reinfection that tends to interfere with rapid migration of bacilli from periphery to glands.

In diagnosis of hilum tuberculosis, we may have parasternal and paravertebral dullness, coarse breathing, modification of expiration, D'Espine's sign, frail appearance, loss of weight, dry whooping-cough, rapid pulse, slight fever, tubercle bacilli in sputum, sputum sometimes more marked than at other times because of break-down of glands which enter into bronchial tubes, and, with all of this, no x-ray or physical findings in the lung parenchyma. These cases may be acute, sub-acute, or chronic; the skin-test, x-ray and symptoms, and especially the symptoms, will have to be relied upon for diagnosis. Calcification is evidence, but not positive proof of tuberculosis.

BREAST FEEDING

M. K. WYLDER, M. D.
Albuquerque, N. M.

Read at the Annual Meeting of the New Mexico Public Health Association, Taos, N. M., June 2 and 3, 1927.

Some of us attempt to improve on nature but it has never been satisfactorily done. For that reason every baby should be breast fed if it is possible, as there is but one food complete in itself, containing all the food elements necessary to life and growth of young mammals, and that is milk. The milk of different species of animals differs greatly in its chemical composition. It is, of course, possible to satisfactorily feed the young of one species with the milk of another by modifying it so as to imitate the chemical characteristics of the milk of the other species.

Eighty-five per cent of human mothers can nurse their young if a sufficiently earnest and intelligent effort is made for them to do so. The only excuse for not

nursing a baby is active tuberculosis in the mother, and in that case she not only should not nurse her baby, but should not have the care of it any more than absolutely necessary. Of course, it would be impossible for any mother with cancer, advanced Bright's disease, advanced heart disease, or in the later stages of any wasting disease, to nurse her baby, but it is very, very seldom that a woman in this physical condition conceives, and if she does, she has not the strength to carry the baby to term and loses it before maturing.

In some communities, where an honest effort has been made, they have been able to get eighty-five per cent of the mothers to nurse their babies. Among the advantages of breast feeding are: first, naturally the mother's milk contains the chemical characteristics necessary for the growth of her child; second, the mother's milk comes directly from the breast of the mother to the mouth of the baby without passing through outside air, without any handling or any possibility of contamination—in other words, it goes directly from the producer to the consumer, cutting out all middlemen.

A baby on the breast grows, also, because it receives more calories than you can feed in the average formula used, as breast milk contains twenty calories per ounce, whereas a great many of the formulas are diluted and doctored up until they do not contain nearly that much.

Mother's milk is claimed by some to contain antibodies or immune bodies, but this has never been proven and if it does, these same immune bodies would be contained in cow's milk. With breast feeding the milk is always fresh, and we all know that cows' milk, when it is first milked, has a very low bacterial count, but this bacterial count increases. No matter with what care the milk is handled, there is always a possibility of contamination; the milk may sour. In some places they have organized to gather all the surplus breast milk from mothers who have plenty of milk, sterilize it and use it. Many pediatricians question whether this is of any benefit. Nature has a great way of rising to its requirements; for instance, the Hottentot mother, where scientific feeding is absolutely impossible, nurses her babies until they are three or four years old and sometimes is nursing two or three babies at the same time.

Recurrence of menstruation is no excuse for weaning a baby and the average mother can nurse her baby very satisfactorily during the early months of pregnancy. If the baby vomits or has trouble,

more than likely, if taken from the breast and put on the bottle, the trouble will become worse instead of better, and in many of these cases where a baby is not doing well, a close study of the baby will find what is causing the vomiting. It may be simple cold; it may be sinus trouble or middle ear trouble. In fact, middle ear trouble causes so many digestive up-sets in babies that Dr. Marriott says the examination of a baby is never complete without examining the ears, and that a man cannot practise pediatrics any longer without an electric otoscope. And you will find that many cases of diarrhea and vomiting in which there have been no symptoms of pain in the ear, clear up like magic on puncturing one or both ear drums.

The only test as to whether the mother's milk is sufficient is, does the baby gain. If he is making a satisfactory gain, the milk is sufficient; if he fails to make his gain for two successive weeks, he should be carefully studied to see why and, if no parenteral infection is found, must be aided by supplementary or complementary feeding.

Very often a mother's worrying about her baby interferes with her milk supply. I have had numerous cases of this kind; a mother worrying about her baby and the baby not making its gain in weight because of the mother worrying. Put the baby on a small amount of milk in the bottle after having taken the breast. The baby begins to gain at once, which, of course, pleases the mother and, after a week or two, the baby will quit the bottle and keep on making a gain with nothing but the breast. It is simply this: freedom from worry on the part of the mother has increased her milk supply and she is now able to go ahead and furnish the baby with a sufficient supply of food. A nursing mother should have plenty of exercise, but have no responsibilities that give her a feeling of tiredness or exhaustion; should take a good liberal diet; should eat the kind of foods that agree with her and the foods she is used to. Any food that gives the mother indigestion will disturb the baby also, but if it does not give the mother a digestive up-set, it will not disturb the baby.

Do not take the baby off the breast simply because something is wrong with him, because at that time he may need the breast worse than he ever needed it in his life. Good pediatrics consists in figuring out what the baby's needs are, supplying them and sticking to it; bad pediatrics consists in changing the formula and plan of feeding every time you see the baby.

Many mothers can nurse their babies until they have switched over to a regular diet; beginning with the addition of cereals at about five months, spinach at six months and increasing these outside foods as the mother's milk diminishes, until they are taking enough of these foods to keep them growing. When that can be done, it is the ideal way, because, should the baby contract any illness, you have the supply of wholesome mother's milk to fall back on and to be an anchor in the time of storm.

MEDICAL EXAMINATION OF FOOD HANDLERS

O. E. PUCKETT, M. D.

County Health Officer, Eddy County, N. M.

Read before the Annual Meeting of the New Mexico Public Health Association, held at Taos June 2 and 3, 1927.

Section 9 of "Regulations Governing the Sanitation of Foods," says, "No person who has any contagious disease shall work or be permitted to work in any food-handling establishment." In the beginning, I will have to admit that I have not enforced this regulation in Eddy County. In order to enforce it, every person from the grocery delivery boy to the "chef" in the cafe, would have to undergo a thorough physical examination and have laboratory tests of all excreta and blood. Superficial inspections are worth nothing, in my opinion.

These problems confront us: If the County Health Officer in a small unit makes all these examinations, he will have more than he can do. If the physicians are called on to make them, will they be able to collect good fees for such examinations and will we get complete examinations? Or, will many physicians be inclined to "get the patient by"? Many physicians are prone to make favorable reports on life insurance examinations, school teachers' examinations, etc. I think if these examinations could be made in a thorough way, good would be accomplished.

A plan I have in mind which I believe will work well is to make these examinations myself. Then, in case I find a person with a communicable disease, have him call the family physician in consultation before I report the case. The question of interesting food handlers in a physical examination is the same that we meet in asking everyone to have periodical examinations. The public must be taught and impressed with the importance of such examinations in order to have their cooperation.

I have tried to get feces tests on all dairy employees, but have not been able to do that as I intended. In the first place, some

people rather hesitate to furnish the specimens. In the second place, it is so hard for the dairymen to keep regular help. About the time one gets reports from one set, they quit or get fired and new ones are on the job.

I have sent in a few nose and throat swabs from barbers and food-handlers, but only a small per cent of those employed in the county.

I have discussed with one of the Carlsbad officials "having all people who work in cafes get health certificates." I think dairy employees are more important than any other class.

I shall be pleased to hear what the other men are doing along this line.

THE PRODUCTION OF SAFE MILK

PAUL S. FOX, C. E.

Chief Dir. of San. Engr. and Sanitation, N. M. Bureau of Public Health, Santa Fe

Read at the Annual Meeting of the New Mexico Public Health Association, Taos, N. M., June 2 and 3, 1927.

Milk, as it leaves the udder of a healthy cow, is clean and pure. It contains relatively few bacteria and no appreciable quantity of visible dirt. When cow hairs, particles of manure, bedding, or dust are found in milk they are evidence that the product has not been protected properly during milking or subsequent handling. On the other hand, the absence of visible sediment does not prove that the milk is clean, for it may be carefully strained after careless production.

The entrance of dirt into milk is objectionable from three standpoints—sanitary, economic and aesthetic. The contamination of milk by manure may add organisms which are injurious to health, particularly to the health of the very young and the very old, who are the ones who need milk in their daily diet, and, aesthetically—who wants to drink dirty milk? Economically, dirty milk is not so readily marketed as clean milk. Dirty milk, obviously, has more bacteria in it than clean milk, and consequently it sours much more quickly. Several authorities have found that there is a very definite relation between the amount of sediment contained in milk and the bacteria count. This paves the way for the health officer to do a little educational work with his dairymen, even though he does not have a laboratory available.

By far the greater portion of dirt in milk is accumulated after the milk has been taken from the cow. Its source is primarily from the body of the cow and the milker's hands. Immediate straining is of much

value in removing such particles of dirt and in improving appearance of the milk. However, it must be borne in mind that straining does not remove the bacteria, nor does it improve the healthfulness of the product.

In the production of safe milk, it is necessary to safeguard the product on every hand; the cows should be healthy, tuberculin tested; the milkers, milk handlers, and deliverymen, should be healthy—they should be examined to see that they are not carriers of typhoid or diphtheria. Milk barns and milk rooms should be immaculately clean, the dust and fly menace should be reduced to a minimum; every utensil with which the milk comes in contact, should be properly sterilized; milk pails should be of the small mouth type; and the cows should be thoroughly cleaned before milking.

Tuberculin Testing. Any veterinary can make the tuberculin test. The Bureau of Animal Industries of the U. S. Department of Agriculture has established definite areas in which all dairy cattle are examined. With the recent appropriation by the State of New Mexico for the control of bovine tuberculosis, it is probable that more areas will be created in which tuberculosis will be stamped out. Men who are familiar with conditions in this state tell us that, so far, the tuberculosis rate is low and that now is the time for the best control work to be done at a minimum cost.

Milk Handlers. Every person who handles the milk in any way, or comes in contact with milk containers, should be examined at periodic intervals, say every six months, in order to establish the fact that he is not a carrier of typhoid or diphtheria.

Cleanliness of Premises. The milk barn should be provided with running water to facilitate thorough cleaning. The floor of the barn should be of concrete or other impervious material. Lighting and ventilation should be adequate. Sometimes I wonder whether or not the figures on our score card are not rather high, as very few, if any, dairymen stable their cows. About the only time they are in the barn is when they are being milked. However, there may be a stormy period once in a while in which it may be desirable to keep the cows indoors, and then ventilation is very necessary. The corral should be well drained, and all manure should be removed daily in order to keep the fly menace down. Our score card specifies the minimum distance to which the manure should be re-

moved, but for successful reduction of flies, it should be removed to some remote spot.

Sterilization of Utensils. Every utensil which comes in contact with the milk should be sterilized by one of several known satisfactory methods. Perhaps the best method of sterilization is the steam chest. This consists of a metal lined wooden box, or masonry box, provided with suitable doors and shelves, into which live steam can be admitted for a period of fifteen or twenty minutes. This chest can be constructed with a heating coil, so that when the sterilization is complete, the steam can be turned on in the heating coil and all utensils dried, in order to reduce to a minimum the rusting of metal containers.

Another satisfactory method consists of rinsing all containers in a solution of "B-K" (a commercial solution of sodium hypochlorite) or in a solution of ordinary chloride of lime. The chloride of lime has the disadvantage of leaving a white dusty deposit, particularly on glass. This can be eliminated, to a certain extent, by preparing a stock solution of the lime with twelve ounces to one gallon of water. This should be kept in a glass stoppered bottle. The solution is used in the rinse water at the rate of one tablespoonful to two gallons of water. By preparing the stock solution, the inert lime settles to the bottom of the bottle.

Actually boiling the utensils is a very satisfactory method of sterilization, but most people who use boiling water merely pour it over the utensils, which are cold, and the temperature is not sufficient to kill all of the bacteria.

The steam jet is very satisfactory for sterilizing large metal containers when it is used for a sufficient length of time.

Cleaning of Cows. Most dairymen have the idea that if the cow's udder is free from visible dirt, it is clean. The udder should be scrubbed before milking in order to eliminate all loose particles which may drop into the milk. It is also necessary to dry the udder to prevent chaffing of the skin. The small-top milk pail also helps to keep out any particles which escaped.

Sediment Test. This test can be made by any one and is very illuminating to the dairymen. It consists of taking a quart bottle of milk, and passing it through a prepared cotton disk. Any sediment in the milk will be retained upon the disk. A device is on the market which can be placed over the milk bottle, thereby eliminating the necessity of using another container for the milk.

STANDARDIZATION OF RECORD FORMS AND FILES FOR FULL-TIME COUNTY HEALTH UNITS

D. B. WILLIAMS, M. D.

Chief, Division of County Health Work, N. M.
Bureau of Public Health, Santa Fe

The adoption of a fixed routine in making physical examinations is considered a *sine qua non* by the successful practising physician, whether he be a practitioner of general medicine, an internist or a representative of any of the many present day specialties. Unless a satisfactory system is followed in the examination and management of patients, it is possible for facts and conditions to exist that are so inconspicuous at the time as to escape notice and later on assume such importance as to spoil the difference between failure and success in treatment.

To the health officer as director of his unit, system and order are equally as essential, if not more than they are to a representative of any other branch of the profession. It has been customary in our full-time units for the health officer to develop his own office system and to devise such record forms, charts, maps and files as best suited his particular notions. Exceptions are made of monthly and annual report forms, laboratory reports, dairy inspection forms, some particulars relating to the vital statistics which are uniform for all units and were prescribed by the State Bureau of Public Health, and records for certain features of maternity and infancy work which were made uniform in order to meet the requirements of Sheppard-Towner regulations. In all other respects there has been very little uniformity in the office order of full-time units.

On the whole, the system used in each unit has been satisfactory until a change in health officers occurred, then troubles have usually arisen, especially so when the incoming health officer has not spent sufficient time in the office before retirement of the old health officer, to become familiar with his system. Difficulty in locating any object for which he may have need and further difficulties of interpreting the records when found, are likely to strain his patience and give him an impulse to junk the whole outfit as worthless, and start a system of his own. This impulse has, to my knowledge, been followed in one instance, and records of considerable value to the unit were destroyed or purposely lost.

In order to avoid the confusion that arises because of such conditions, it appears that it would be very profitable to devise uniform standards of record forms, maps,

charts, and files, covering such items of public health interests as are common to all of the units. Considerable caution would need to be exercised that the system be not elaborated and extended to such proportions that it would be cumbersome and unwieldy, keeping in mind that the ends to be gained are: (1) to provide a routine for carrying out certain activities (e. g. epidemiological surveys, inspection and scoring of food-handling establishments) that would insure thoroughness and perhaps lead to greater improvement; (2) so to classify, arrange and index data, that they would be most easily accessible and available for the many purposes for which they may be used.

In discussing this subject with county health officers, the director and the heads of the several divisions of the State Bureau of Public Health, there was found to be agreement as to the advisability of working out a simplified uniform system of record forms and the adoption of suitable files for their keeping. There was also consensus of opinion that no sweeping change should be made in the present system until the subject had received ample consideration by a committee appointed from the members of this association; that sufficient time be allotted the committee to investigate the methods used in full-time county units of other states and, as a beginning, only such items be included as would not entail any considerable increase in labor or office expense.

As to what might and ought to be included in this prospective scheme, a few examples are here given under the several divisions of health work.

I. Vital and morbidity statistics:

To the standard forms already in use there may be added record books, tables, graphs, and charts showing the disease incidence for the several notifiable diseases by localities, age groups, sex, and race, for definite time periods;

Tables and charts showing mortality rates for the several diseases.

II. Communicable disease:

Uniform epidemiological investigation cards for typhoid fever, diphtheria, scarlet fever, smallpox, whooping-cough, and measles;

Immunization cards for typhoid, smallpox, diphtheria, and scarlet fever. It may be more economical and convenient for all the vaccinations of an individual to be carried on one card, instead of having a card for each disease, or better still, to have vaccinations recorded on the pre-school and school card.

Spot map for current communicable diseases.

III. Sanitation:

Forms for inspection and scoring food-handling establishments, barber shops, tourists' camp grounds;

Record forms for medical examination of food handlers;

Nuisance complaint records;

Forms for school sanitary surveys;

Spot maps for water supplies, toilets, and cess-pools that need special supervision.

Items similar in number may be indicated in the divisions of child hygiene, maternity and infancy and in the other primary divisions of health work, but, as the above have been cited merely as examples of what would likely be included in the revisions of office records and forms, it will not be necessary to go into further details.

My aim in presenting this paper was not to advance any information not already possessed by each member of this organization, nor to criticise the methods used in our full-time county health units, but was rather to introduce the discussion of a subject that seems to me to merit consideration. I hope that the discussion will be liberal and that the matter may finally be placed in the hands of a committee which shall be given a year's time to carry on its investigation and submit recommendations at the next annual meeting.

THE CONTROL OF GERMAN MEASLES AND CHICKEN-POX

C. W. GERBER, M. D.

Dona Ana County Health Officer, Las Cruces,
N. M.

Read at the Annual Meeting of the New Mexico Public Health Association, Taos, N. M., June 2 and 3, 1927.

The control of German measles and chicken-pox presents many difficulties, not the least of which is the attempt to apply certain parts of the requirements as set forth in our present regulations.

These diseases have no mortality to speak of, and the public, from long experience, has realized this feature, and consequently assumes an attitude of indifference and disregard of the regulations imposed upon them. Most of their contentions, viewed sanely, seem just and logical. From the viewpoint of the Health Officer, I have no fault to find with the provision requiring that these diseases be isolated in as far as possible, owing to their possible resemblances—German measles to measles and scarlatina; chicken-pox to smallpox. And it does give one a chance to get into a family with general and special instructions of various natures. This is the only ad-

vantage that I can see for making these diseases controllable; and is necessary to a department for the purpose of launching and maintaining a constructive health program. The part that seems illogical, time consuming, fruitless and an economic loss, is the quarantining of non-immune contacts. Rubella seems as infective as rubeola, and therefore, non-immune contacts are certain to manifest the disease. In most instances the premonitory symptoms are so slight that the first manifestation of the disease is the rash. Previous to the appearance of the rash there have usually been a great number of contacts, so there is not the opportunity which rubeola presents for the early control of a particular case.

Our regulations require that non-immune contacts be quarantined—in German measles twenty-one days; in chicken-pox, fourteen days. Owing to the fact that, in either disease, the course is very seldom disabling to the individual, parents are not likely to consider quarantine of any importance; and, since the diseases have few prodromata, new contracts are constantly being made. This renders the quarantine useless; and to insist upon the conditions of a quarantine in affections which are so tame in their course is not impressive to the public, and weakens the entire scheme of communicable disease control by its apparent unreasonableness.

Economically, owing to the ineffectiveness of parts of the present regulations to control the spread of the diseases, there is a great loss to the school child and to the public school system. Twenty-one days in the case of German measles and fourteen days in the case of chicken-pox, with one more week added for German measles and two weeks for chicken-pox in case they develop infection, with an average of three school children to the family, gives an enormous loss in each family involved and a costly quarantine to the school system. A loss of one month of school instruction practically necessitates the loss of one grade for the child.

Another factor enters into the control of these diseases as well as for all of the communicable diseases amongst school children; this is, the attitude of the teacher. In schools—and they stand out prominently in any community of the state—where the teachers are keen, interested in the welfare of their pupils, collectively and individually, and where they cooperate with the health department in early recognition of disease and early reporting, no epidemics of any proportions result. But in schools

where the teachers are indifferent, not interested in anything but the maintenance of attendance at any cost, we find few, if any, exclusions for communicable diseases; little, and most often no, reporting and a general attitude of opposition toward the efforts of the health department to stem the tide of communicable diseases and even toward health education.

In these latter schools, we always have our greatest epidemics; and we find that the teachers involved come usually from states where little or no constructive health program, or organized state health department, functions. This emphasizes the great necessity, as an economic measure to the public school system, of requiring of its teachers a certain degree of training in health matters.

To refer to the original subject matter: Owing to the facts presented, I would be in favor of so changing our regulations in respect to these two diseases—and would be inclined to add one more, mumps—to conform to the requirements for these diseases as set forth in the last report of the Committee on Standard Regulations for the Control of Communicable Diseases, of the American Public Health Association.

THE NURSING PROGRAM IN A FULL TIME COUNTY UNIT.

EDITH C. CLEMENT, R. N.,

County Public Health Nurse, Eddy County, N. M.

Read at the Annual Meeting of the New Mexico Public Health Association, Taos, N. M., June 2 and 3, 1927.

A full time county health unit is put in force to bring about and maintain better health conditions and principles for every individual in the county it serves. To do this, a program very well planned, financed, and executed is necessary to accomplish the work required by the many phases of public health work. Communicable disease control and prevention, sanitary inspections, pure foods, school health, including both inspections and education, tuberculosis work and maternity and infancy work are the most important of these phases. The county unit should be the center of all matters of hygiene and sanitation in the county—to the individuals, as well as to the group and community as a whole. In its ability to reach the many questions directly, though handicapped as we usually find it by long distances and scattered communities, the county unit may be termed the long arm of the state and national departments of health.

We believe that those services that are directed by non-political boards are more

successful, in that the employees generally come up to higher standards. Training in the respective types of work is most necessary in selecting the staff for a county unit of whatever number of persons. The arrangement of the general program depends entirely upon the staff, but the above mentioned phases must be dealt with, regardless of who carries which part. A hearty feeling of co-operation and desire that "our department's work" is well done, must be in the heart of each member of the force, and it is only by the sharing of some part of the divisions of the generalized program by each, that harmony and completion of duty will be gained. All must be ready to stand together the many knocks that are sure to come to those who are laboring in the newer enterprises, for this work is yet young.

Whenever a unit is created, the nursing program is one of the two most important considerations. This program varies greatly, depending entirely upon the circumstances, nurse's individuality, how financed, territory covered and types of communities, the age of the service and number of nurses in the unit. Whatever the number of the various employees in the unit, the nursing program includes some part of each phase of the general program—if in no other way, through the children. In their little imagining minds we usually find that the nurse occupies the romantic seat of honor and her kind words and suggestions are often carried home as law or precious duties that must be done.

We have heard so much about the specialized nurse. Apparently, specialization, when a district (county) justifies more than one nurse, would be the logical way of carrying out an effective nursing program. But after studying various statistics and investigations made on this topic, we learned that the odds are greatly in favor of the generalized public health nurse when the quality of the work done and the effect upon the mother is considered. The type of people that the public health nurse more often deals with, are those who are deeply impressed by the individual, so that one nurse who is "liked" by a certain group or district can probably reach more vital points in her home visits than a number of specializing nurses calling on various missions.

We might here give a rough draft of a full time unit's nursing program, the detail assignments proportioned according to the above mentioned factors affecting such a service.

In the county where the budget is made up of funds from county boards of direct-

ors, the state board of health, etc., and federal aid such as the Sheppard-Towner appropriation, the work may be divided into these three respective classes: one-third of the program going to maternity and infancy work alone; one-third to the school, in all of its phases; the remaining third to tuberculosis and communicable disease control, home demonstrations, emergency and general calls. Of course, it is generally conceded that the school health program, headed by the physical inspections, is the quickest and most effective method of making progress in a new community. But we feel that, after the service is well established, the school health program should not absorb so much time, but rather be shifted to the teachers, supervised by the nursing staff, with at least one yearly examination or inspection of all the pupils, done by the county health unit.

Some districts may arrange for the nursing service to carry only certain types of work, but, as a part of the county unit, the work of almost all divisions is carried in part by each member of the staff. By this, we mean that a very efficient health officer finds that his efficiency in control of communicable diseases may be due, to a large extent, to the contact and follow-up calls made by the nurse and the preventive measures practised by the children of the home, learned by them in health lessons at school. Also, in the use of vaccination and serum, an uninformed or non co-operative parent may be led to consent to this protection for her children by health talks at group meetings or regular attendance at health conferences. The nurse has a large sphere, for, after all is said and done, it is a matter of lack of education that we still have the communicable diseases that we have. When everyone understands the methods of prevention and believes in them, we will have so much less of such cases. In this last sentence is the key to all health work—that those who are selling health must present its principles in such a way that everyone can thoroughly understand. The people must have faith in the messenger of health as well as in the doctrine taught and, in this light, what otherwise would be termed mere theory, will be facts. When a certain case of a communicable disease in the family recovers with no complications and without others in the household becoming infected, under the supervision of the nurse and carrying out the regulations for such cases, and when another case, without these, suffers an extended serious illness and infection of others, the

public will necessarily wonder as these facts are brought to mind.

In the question of sanitation, the seeds sown by the nurse in hygiene classes may carry influence with the great power we term "public opinion" in bringing about the cleanliness spirit, in every community and home, that is necessary for the complete carrying out of the principles of the sanitary inspections. The same applies to the absorbing question of pure food. If the nurse, by contact with homes, can start the investigation of the source of every food particle brought into the home, someone, and more than one, is going to be kept busy on the trail of clean food for our tables.

Those of you who were fortunate enough to attend the New Mexico Medical Association's annual meeting held recently in Carlsbad, have still fresh in your minds how great is the need for education on, and early diagnosis of, tuberculosis. Perhaps we who are carrying on the public health work in our counties say we could do more if we could only find the cases. The approach is so difficult, so we say—we might do more work if the physicians will only report better. Perhaps if the nurses show more work done for the few reported, so that the physician himself notices it, we may get more reports. And surely, the nurse who is carrying on a strictly maternity and infancy program can never afford to overlook a probable tuberculous infection in a home where there are young children. We say our funds are limited and so often, besides the educational advantages we may give, material aid is needed. When we have our lay people knowing what the fight against tuberculosis really consists of, tuberculosis funds, such as the annual seal sale, will be greatly swelled. Dr. William Welch gives us this: "The greatest contribution to the anti-tuberculosis movement has been in the evolution of the public health nurse from the old time district nurse."

The mission of the maternity and infancy program is so broad and important that no unit can pass it by lightly—and it is the nursing staff that carries its chief responsibilities. Where a good maternity and infancy program is found, there is also found good birth and death registration and lowered maternal and infant death rates. Some may be prone to place all of these duties upon the nurse, but when the health officer feels the aid of the maternity and infancy nurse to his unit, some value is sure to come to the nurse, in professional and co-operative support.

We feel that health education belongs first on the program of every county unit and no opportunity to give a health lesson should be omitted, whether at a party, church, picnic or in the home. Whenever there is occasion for a speech, give one. Every nurse should be ready to talk on some topic in whatever gathering she may be found. The same talk may be used more than once, for the same crowd seldom appears under the same circumstances. We might follow the theory of the old pastor who said he always preached on the same text until every one did what he told them to, then he took a new text to treat in the same way.

Most of us have found those communities where it seems impossible to organize mothers' clubs and health classes. In communities where everything is full of organizations already, put health into these. Keep as many lay people busy as possible—most women are thrilled with an appointment to the secretaryship of the welfare work in their club, of whatever type it may be. Few clubs today do not have some time set aside for health, on their year's program, and some will sponsor home and community hygiene classes in their own clubs or, perhaps, make places for them in high school and in both Boy and Girl Scout programs.

In school health work, an organized program suitable to the school should be started at the first of the term and carried throughout the year. We have found the five-point pupil campaign successful in our county for the few months it was carried on this year. We use inspection rather than examination for the school children, for we feel that, when this is done carefully and not too hurriedly, it fills the need for the grade and junior high school pupils. But when a child reaches the high school age, with all the problems of adolescent health, our county unit feels that he needs more than this superficial inspection. From the results found in a few complete life-extension physical examinations done this year, we are considering giving the same health service this coming year to the high school students of the junior and senior years, at least.

Herbert Hoover has said, "America's greatest asset is her children," and we are all familiar with the Child's Bill of Rights. We also know that anything, to be successful, needs to be sufficiently endowed. To the unit that is carrying the responsibility of the maternity and infancy program, also belongs the privilege of bestowing upon

America's greatest asset the most worthy endowment, health. Most of the full time units in New Mexico have had an uninterrupted nursing service for only a short while, but, in following up the results of the maternity and infancy work, we may do well to consider Dr. Haven Emerson's rule: "The progress of a community towards adequate standards of child health is to be measured not by the number of defective children corrected nor by the visits of the doctor or nurse, but by the smallness of the number of abnormal children entering school."

TRUTH ABOUT MEDICINES

NEW AND NON-OFFICIAL REMEDIES

Bismarsen. The Council on Pharmacy and Chemistry publishes a preliminary report on Bismarsen, the name given by the Abbott Laboratories to a new derivative of arsphenamine containing bismuth and proposed for use intramuscularly in the treatment of syphilis. Bismarsen is the sodium salt of a bismuth derivative of arsphenamine methylene sulphonic acid the exact structural formula of which has not been established. The Council reviews a report of clinical trials made by Drs. Stokes and Chambers and of a study made for the Council. The Council finds that the available evidence is insufficient to permit the acceptance of the drug for New and Nonofficial Remedies; however, the generally favorable character of the reports together with the fact that Bismarsen is a chemical substance of controlled composition is sufficient to warrant its further trial by physicians with due recognition of the fact that the drug is still in the experimental stage. For the information of those who desire to use this compound, the Council publishes a description of the chemical properties, the actions, uses and dosage of the drug. (Jour. A. M. A., July 16, 1927, p. 204).

Radithor. This is one of the numerous pieces of quackery in the field of radioactivity. It is exploited by the Bailey Radium Laboratories of East Orange, N. J., the moving spirit of which is one William J. A. Bailey. The Radithor quackery consists of thirty half-ounce bottles of distilled water which is alleged to be radioactive. No less than thirty bottles can be purchased; and the price is \$30. That is, the price to the sucker who happens to be a layman is \$30; to the easy mark who can write M. D. after his name, it is \$25. An order form ".....for Doctor's Use Only" states that "when patient buys direct, we allow doctor a \$5 credit on all orders." The physician who would order Radithor must be weak not only in medicine but also in morals. (Jour. A. M. A., July 16, 1927, p. 208).

"Viscose" for Varicose Veins. The Viscose company, Los Angeles, California, sells a small amount of a glue mixture with a few rolls of gauze bandages for \$30. This combination is sold as a means of reducing varicose veins. Apparently, the Viscose company also gives medical treatment to those who will come to its headquarters. The treatment consists of the mixture "Viscose" which is melted, applied to the leg and covered with gauze; more "Viscose" and gauze are applied and finally all covered with a paper bandage. An analysis of "Viscose" in the A. M. A. Chemical Laboratory showed it to be essentially a mixture of zinc oxide and glycerin in a gelatine base. The laboratory pointed out that the name is misleading, as viscose is a well recognized chemical substance. (Jour. A. M. A., July 16, 1927, p. 225).

HISTORICAL EL PASO

The Medical and Surgical Association of the Southwest each autumn has attempted to give evidence of progress. This November, the innovation of a post graduate assembly with masters in many special fields of medicine, is assured.

Four days replete with scientific summaries along four main and three side lines of special subjects have been prepared. That those who are the distinguished

city of our nation's Mexican border, which extends east and west for a total of more than two thousand miles. Tall, barren mountain ranges shadow at eventime El Paso's happy homes and business buildings. Sunrises, shading from dull reds to saffron yellows, harmoniously blend with cobalt blue of her fleckless sky, miraging in the early morning the cactus and sagebrush covered desert plateaus to the northward into a seeming placid sea.



EL PASO FORTY YEARS AGO

Like many another beautiful city of the west, El Paso was carved out of the desert. The prophetic sign in the foreground,—“Builder” was the spirit of that day and has resulted in the El Paso of today.

guests of the Medical and Surgical Association this fall, and those who have failed to attend in former years, may have some inkling of the history of the host city, El Paso, the following verbal and pictorial picture has been prepared by the El Paso County Medical Society.

Mentor-like, El Paso has long stood as the friendship agent between two republics. The story of her past is a portion of the history of two nations. Strife, leading to conquest, made this place the leading

Along the southern limits of the city meander the sand-laden waters of the Rio Grande. Famed in song and story, history and legend, this narrow stream commences at El Paso's western gateway to serve as the boundary line between the two republics. To the east, an irrigated valley like that of the Nile, borders both banks of the river and the desert rims of two countries, with the vivid greenness of an oasis.

Previous to Texas independence, the present site of El Paso,—then Spanish do-

EL PASO TODAY

The commercial and intellectual center of the great southwest, with beautiful buildings, an enterprising people, and a surrounding empire of progress and culture.





SCENE OF JUAREZ, MEXICO

Just across the Rio Grande River from El Paso, five minutes ride by street car or auto, is the historic city of Juarez, with its Spanish mission, old buildings and its clubs for entertainment.

main,—was known as El Paso Bravo del Norte. Our sister, Ciudad Juarez, Mexico's most interesting northern gateway, was but an undivided settlement from the present El Paso. Northern seeking Spanish expeditions rested here. Alvar Nunez Cabeza de Vaca, by his Indian captors compulsorily created a physician, led remnants of his brave followers across the site of the present two cities in 1536. He and his men were survivors of a Spanish expedition wrecked off the coast of Texas in 1528. Rodriguez on his way to found one of the first Franciscan missions in the present United States boundaries, tarried here in 1581. Later, he continued his journey to the present site of Albuquerque, where he built the old mission of that city. Benavides in 1631 and later Fra Antonio de Artega visited and historically hallowed the present sites of El Paso and Ciudad Juarez. Espejo stopped here in 1582 before continuing his constant, danger-harried journey to establish a mission in what is now the city of Santa Fe. The first Spanish settlement of El Paso del Norte occurred in 1659. The present site of El Paso, the ranch home of Juan Maria Ponce de Leon, a citizen of Spain, who erected his home here in 1827, became, in 1836, a portion of the Texas Republic, changing allegiance by war's decision.

On the city site was located the first trading post and settlement in the vast territory which now forms the great commonwealth of Texas. The hamlet was known as Franklin, for a time, but when the town

was platted by General Anson Mills in 1858, the name was changed to El Paso. In honor of the Mexican national patriot, Juarez, on September 15, 1888, our neighbor's old name, Paso del Norte, was changed to Ciudad Juarez.

Bret Harte, rhythmically describing Crede, Colorado, years ago, said:

"It was day, all day, in the daytime,

And there was no night in Crede."

The name, "El Paso," might well have been substituted, without altering either the meter or the truthfulness of Bret Harte's statement, for El Paso, twenty or twenty-five years ago, revelled in the constantly open door of her saloon and gambling place. Every hour of the twenty-four the click of the roulette ball blended with the croupier's call. Liquors, hard and soft, tickled the palate and dulled the judgment of the novice player. Western hospitality and quick, individual decisions as to law and life, ruled, and ran rampant. The brothel was a licensed institution. Flame-of-the-Yukon-like dance halls were numerous, serving the adventurous resident and visitor with a rude form of entertainment. The two-gun man personally and publicly settled his real or imaginary wrongs in a sudden and decisive manner. Through the streets the picturesque cowboy strolled, brown-skinned, keen-eyed, visage wrinkled from long peering into the desert wastes or mountain heights for strayed members of his own or others' herds.

Mexicans, mining men, quiet voiced gam-

blers, early pioneers, blended, lived, understood and respected one another. Volstead, though alive then, was not an influence that extended even to the border. One-story adobes, cool and hospitable; Mexican jacals, and here and there a more pretentious two-story brick, served as the residences of the then El Paso citizens.

But through the woof and web of many of the inhabitants of our town ran a high, silent regard for right and morality. Quietly, the leaven of this belief worked until

bit of gas used in an automobile, needed to reach the haven of heavy or light liquors; with a river decreed dry on one side and wet on the other, alone separating El Paso from her kindly neighbor, Ciudad Juarez, the article showed the people of this town high as to their rating of obeying the liquor laws our government has adopted. With liquor in abundance near, our police annals show but a scant number of arrests for drunkenness.

We of the medical profession of El Paso,



PLAZA; JUAREZ, MEXICO

Showing the famous old Spanish Mission, built by the Spanish missionaries in the seventeenth century. On all sides of this plaza are to be found places of interest and amusement to delight the visitor.

the Good Citizens' League was created for the purpose of changing El Paso from a Monte Carlo to a recognized Christian community. Law and order of a saner form gradually gained strength until it grew into a small avalanche of accomplishment. El Paso soon became a small city not unlike its eastern contemporaries. The last two decades have been times of progress, and now El Paso is one of the show spots of the Southwest.

Some time ago the Literary Digest published an article, comparing the various areas of the United States as regards respect for or infringement of the Volstead Act. With a six-cent fare or only a wee

represented in a collective sense by the County Medical Society, are proud of our professional standing.

The medical man devoting his attention to the treatment of human ills has long known that a proper diagnosis must needs precede a therapeutic handling of a case. Laboratories of every kind known to the medical world, operated by skilled and enthusiastic workers, are located in El Paso. X-ray, pathological, bacteriological, chemical, electrocardiographic, polygraphic, metabolic and protein laboratories, as well as physiotherapy laboratories, are all established here, with highly trained men in charge of the equipment. Shoulder to



HOTEL DIEU SISTER'S HOSPITAL

The largest hospital of El Paso is the Hotel Dieu, where the major portion of the general surgery is taken care of. This hospital was established in 1894 by the Sisters of Charity, and is thoroughly equipped for clinical and surgical work.



EL PASO MASONIC HOSPITAL

A general hospital, established 1916, has an organized staff, and is thoroughly equipped for general medical and surgical work.

shoulder with the medical men of El Paso, our colleagues in the entire Southwest represent a wonderful degree of medical preparedness.

El Paso is particularly well equipped for handling the tuberculous individual. There are five tuberculosis sanitariums, two nursing homes, three convalescent homes, and

numbers of private homes which are giving special care in the way of diet and housing of the tuberculous patient. Each of these has been investigated by the Chamber of Commerce. Each of them is either under the direct supervision of a physician, being owned or supervised by some member of the El Paso County Medical Society, or has



HOMAN SANATORIUM

The fine new sanatorium of Dr. Homan, of 110 beds, is one of the high class institutions devoted to the treatment of tuberculosis, of which there are several in El Paso.

HENDRICKS-LAWS SANATORIUM

Established 1914 by Drs. C. M. Hendricks and J. W. Laws, with 86 beds, another of the leading institutions for tuberculosis.



ST. JOSEPH SANATORIUM

An institution recently established by the Sisters of Mercy, for the treatment of tuberculosis, with Mr. Orville Egbert as director. Announcement to be found elsewhere in this issue.

been investigated by the society, so that each has a recognized standard position in a medical sense.

Not classifying the William Beaumont General Hospital, the magnificently man-

aged institution beyond Fort Bliss for dealing with the military cases of this district, El Paso has three general hospitals, besides the well-equipped city-county hospital.

Within the general institutions of El

Paso practically every delicate form of operative procedure is carried out by skilled operators; every form of subtle medical symptom elucidated by internists. El Paso deals in a medical sense with a wide geo-



HOTEL ORNDORFF

The fine new Hotel Orndorff has been selected as headquarters for the convention. This beautiful hotel of 300 beds, each with bath, has been designed especially for the entertainment of such gatherings. The registration headquarters, information bureau and day-time meetings will be held here.



HOTEL PASO DEL NORTE

This famous and popular hotel, so well known to members of the Association, is properly named. It is the "Gateway to the North" for thousands of travelers who have stopped here enroute. Right in the heart of the city, with excellent accommodations and dining room, it is very popular.

graphical area. This extensive territory looks toward this city for the handling of its difficult medical and surgical cases.

El Paso's climate permits an open-window weather existence on the part of invalids and others. Extremes of heat and cold are not experienced here, and the mean average temperature for forty years has been 64, according to Government reports. An altitude of 3,762 feet is within the range that the greatest tuberculosis specialists have classified as the mean average altitude beneficial to the individual suffering with chest trouble. It is not high enough to be detrimental, and not low enough to produce humid conditions that would be harmful.

El Paso is well equipped to care for conventions in numbers from one to three, or perhaps even four thousand. for its hotel facilities are excellent. The Hotel Paso del Norte, known throughout the Southwest as one of the finest hostleries in this section, and the magnificent new Hotel Orndorff, are perhaps the most pretentious hotels in the city. However, the historic old Hotel Sheldon, for many years the meeting place of the cattlemen and business men of the Southwest, will never be replaced in the affections of the old-timers. There are about twenty smaller hotels, all modern in every respect.

The combined population of the two sister cities, El Paso and Juarez, totaling 150,000 people, blend the American and the Latin tongue and tendencies. To the stranger in either's gate, they, as joint hosts, earnestly strive to make the visitor's stay delightful.

Both of these cities afford the visitor ample means of entertainment during the spare time of his sojourn. Particularly is this true of the friendly ministrations of Ciudad Juarez. The hospitality for which the Southwest is famed is here on every hand, waiting only to be claimed.

We of the El Paso County Medical Society, as colleague to colleague, bid you, our confreres occupied in the larger medical centers and in neighboring fields, an earnest welcome.

PROVIDENCE HOSPITAL

The Providence Hospital, established 1902, is a general medical and surgical hospital, with excellent equipment for all types of clinical work. Illustration of this hospital was not obtained.



CAMP GRANDE, EL PASO

One of the finest automobile camps in the country will be found in El Paso. It furnishes regular hotel accommodations, as well as every type of camping facility which the auto traveller may desire.

HOTEL SHELTON

This hotel, so well known to the old-timers, the principal hotel of the early days of El Paso, is still very popular. It is the tourist headquarters, containing the offices of the Automobile Club. It is even closer to the center of the city than the other principal hotels.

*The Sisters of St. Joseph
announce the opening of*

St. Joseph's Sanatorium

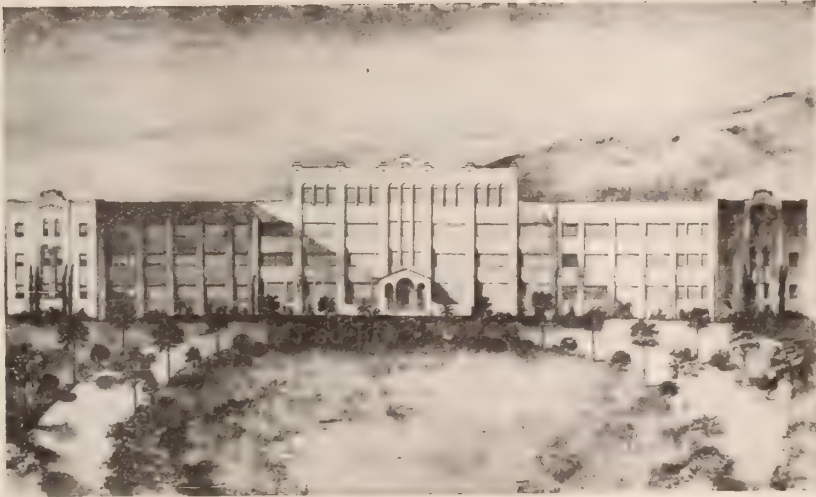
*for the Treatment of Tuberculosis
in El Paso, Texas*

*September first, nineteen hundred twenty-seven
Sister Mary Ursula, Superintendent.*

Dr. Orville E. Egbert, Medical Director

The Homan Sanatorium

El Paso, Texas



"For the Treatment of Tuberculosis"

New, fireproof construction. Electric elevator service. Single rooms or en suite. Sleeping porches. Private or connecting bath. Showers. Medical Staff in constant attendance. All approved, modern methods used in treatment. Special provisions for sunbaths.

Alpine quartz lamps for violet rays treatments.

Write for our New Booklet

Southwestern Medicine

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No. 9

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ANNUAL CLINICAL CONGRESS AND POST GRADUATE ASSEMBLY OF THE MEDICAL AND SURGICAL ASSOCIATION OF THE SOUTHWEST

November 2, 3, 4 and 5

IMPORTANT FACTS

DATES:—November 2, 3, 4 and 5. Four full days. Do not miss any of them. Be in El Paso, ready to start in, at ten o'clock Wednesday morning, November 2nd.

HOTEL HEADQUARTERS FOR REGISTRATION:—Hotel Orndorff. Register here on arrival and secure credentials for admission to clinical lectures.

MEETING PLACE:—For day sessions, Crystal Ball Room of the Hotel Orndorff. For the night sessions, Community Center Auditorium.

RESERVATIONS:—Make your hotel reservations AT ONCE; two other conventions are meeting at El Paso at this same time. Write to Dr. Harry Leigh, Roberts-Banner Bldg., El Paso, giving him your first and second choices of hotel accommodations. He will attend to securing what you desire.

REGISTRATION FEES:—Members of the Medical & Surgical Association of the Southwest will be charged a registration fee of \$5.00 for all the privileges of the meeting. Non-members of the Association will be charged a registration fee of \$10.00. These fees will help to defray the expenses of the meeting which will be considerable. Any doctor who attends and feels that he has not received his money's worth may have his registration fee refunded to him.

Faith prompts the ambitious heading of this column. The radical departure from the usual type of meeting sponsored by The Medical & Surgical Association of the Southwest, deserves success. The staff of

teachers and clinical lecturers have been selected with discrimination.

The El Paso County Medical Society, who will be the hosts for this assembly have entered into the arrangements with their usual enthusiasm. The fine new Hotel Orndorff has been selected as the convention headquarters, and the day time clinical lectures will be held in the Crystal Ball Room of this hotel. The evening meetings, which will be open to the public, will be held in the Community Center Auditorium.

Hotel Accommodations and Rates

New Orndorff.—250 rooms. All rooms with bath. Two persons, \$4.00 and up; 3 persons, \$6.00 and up; 4 persons, \$8.00 and up.

Paso Del Norte.—275 rooms. Without bath: 1 person, \$2.00; 2 persons, \$3.00; 3 persons, \$5.00. With bath: 1 person, \$3.00; 2 persons, \$5.00-\$7.00; 3 persons, \$7.00-\$9.00; 4 persons, \$10.00-\$12.00.

Sheldon.—145 rooms. Without bath: 1 person, \$1.50-\$2.00; 2 persons, \$2.50-\$3.50; 3 persons, \$3.50-\$4.50; 4 persons, \$4.50-\$5.50. With bath: 1 person, \$2.50-\$3.50; 2 persons, \$4.00-\$5.50; 3 persons, \$5.50-\$7.00; 4 persons, \$7.00-\$8.50.

Lockie.—100 rooms. Without bath: 1 person, \$1.50-\$2.00; 2 persons, \$2.00-\$2.50; 3 persons, \$3.50; 4 persons, \$4.00. With bath: 2 persons, \$3.50; 3 persons, \$4.00; 4 persons, \$5.00.

St. Regis.—100 rooms. Without bath: 1 person, \$1.50-\$2.00; 2 persons, \$2.50-\$3.50; 3 persons, \$3.50-\$4.50; 4 persons, \$4.50-\$5.50. With bath: 1 person, \$2.50-\$3.50; 2 persons, \$4.00-\$5.50; 3 persons, \$5.50-\$7.00; 4 persons, \$7.00-\$8.50.

Angelus.—100 rooms. Without bath: 1 person, \$1.50; 2 persons, \$2.00; 3 persons, \$2.50; 4 persons, \$3.00. With bath: 1 person, \$2.50; 2 persons, \$3.00; 3 persons, \$4.00; 4 persons, \$4.00.

McCoy.—80 rooms. Without bath: 1 person, \$2.00; 2 persons, \$3.00; 3 persons, \$4.00; 4 persons,

\$5.00. With bath: 1 person, \$4.00; 2 persons, \$5.00; 3 persons, \$6.00; 4 persons, \$7.00.

Campbell.—80 rooms. Without bath: 1 person, \$1.50; 2 persons, \$2.00; 3 persons, \$3.00; 4 persons, \$3.50. With bath: 1 person, \$2.50; 2 persons, \$3.50; 3 persons, \$4.00.

Laughlin.—70 rooms. Without bath: 1 person, \$1.50-\$2.50; 2 persons, \$2.50-\$3.50; 3 persons, \$3.50-\$4.00; 4 persons, \$4.00. With bath: 1 person, \$2.50-\$3.50; 2 persons, \$3.50-\$4.00; 3 persons, \$4.00-\$6.00; 4 persons, \$4.50-\$6.00.

Linden.—60 rooms. With bath: 1 person, \$1.50-\$2.50; 2 persons, \$2.00-\$4.00; 3 persons, \$2.50-\$5.00; 4 persons, \$3.00-\$8.00.

Gardner.—47 rooms. Without bath: 1 person, \$1.50; 2 persons, \$2.50. With bath: 1 person, \$2.00; 2 persons, \$3.00; 3 persons, \$4.00; 4 persons, \$5.00. Suite, 6 persons, \$8.00.

Knox.—75 rooms. Without bath: 1 person, \$1.50; 2 persons, \$2.50; 3 persons, \$3.50; 4 persons, \$4.50. With bath: 1 person, \$2.50; 2 persons, \$3.00; 3 persons, \$4.50; 4 persons, \$6.00.

Committees

The committees appointed by the El Paso County Medical Society are as follows:

General Arrangements and Program:—Hugh Crouse, chairman; W. W. Waite, W. Warner Watkins (Phoenix), W. L. Brown, James Vance and Orville Gebert.

Hotel Committee:—Harry Leigh, chairman; H. P. Deady, Paul Gallagher, S. G. Von Almen, Frank Schuster, E. A. Duncan and Jacob Rogde.

Commercial Exhibits:—Leslie Smith, chairman; Paul Gallagher, T. J. McCamant, Ralph Homan, J. H. Gambrell and J. R. Hunter.

Pathology and X-Ray Exhibits:—W. W. Waite, chairman; Geo. Turner, P. R. Casellas, J. W. Cathcart, C. H. Mason, Major Hall, G. Werley, Ralph Homan and A. D. Maret.

Public Health Lectures:—W. L. Brown, chairman; J. A. Rawlings, R. B. Homan, R. A. Wilson, J. G. Wilson, Irving McNeil and Mayor Thomason.

Publicity Committee:—Orville Egbert, chairman; E. D. Strong, J. W. Laws, Paul McChesney, S. A. Schuster, A. D. Long and W. E. Jamieson.

Advertising Campaign:—E. D. Strong, chairman; P. R. Casellas, J. G. Wilson and E. W. Rhineheimer.

Entertainment:—F. P. Miller, chairman; J. D. Lynch, J. A. Pickett, C. P. Brown, J. D. Riley, H. E. Stevenson, W. P. Rogers, Col. Miller, Major Scott and Major Wright.

Finance Committee:—E. J. Cummins, chairman; J. M. Britton, S. Haffner, E. H. Irvin, W. M. Branch, Hugh White, A. Villareal, S. L. Terrell, S. F. King, Branch Craig, F. O. Barrett and W. H. Anderson.

Golf Committee:—B. F. Stevens, chairman; James Vance, J. A. Pickett, E. D. Strong, Geo. Brunner, F. D. Garrett and Wm. J. Davis.

Halls Committee:—C. M. Hendricks, chairman; H. T. Safford, W. W. Britton, P. R. Outlaw and W. P. Rogers.

Lantern Committee:—T. C. Liddell, chairman; E. C. Prentiss, J. B. Gray and B. W. Randel.

Transportation:—R. L. Ramey, chairman; H. E. Stevenson and H. H. Varner.

Reception:—J. W. Laws, chairman; J. M. Britton, Hugh Shannon, J. A. Hardy, A. Villareal, Wm. White, Paul Rigney, J. D. Love, J. H. Gambrell, F. M. Barnes, S. T. Turner, S. H. Newman, I. J. Bush, W. F. Duckett, D. H. Huffacker, E. B.

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STAFF OF LECTURERS

It has been the object of the Program Committee to secure twelve or fifteen authorities in medicine and surgery, and allow them sufficient time to teach their various subjects adequately and to answer questions, rather than to crowd into the program the largest possible number of papers and talks. The following group of men represent a very attractive selection:

DR. FRANCIS MARION POTTINGER

Monrovia, Calif.

Director of the Pottenger Sanatorium.

Dr. Pottenger is expected to give two clinical lectures, one on the diagnosis and the other on the treatment of tuberculosis.

Dr. Pottenger graduated in medicine from the Medical College of Cincinnati in 1893 with first honors, and after a year of postgraduate work in Europe, located in Monrovia, Calif. He established the Pottenger Sanatorium for Diseases of the Lungs and Throat at Monrovia in 1903, and it has developed into an institution of world renown. He has held the chair of lecturer on diseases of the chest and climatology at the Medical Department of the University of Southern California (1903-04); professor of clinical medicine at the same school, (1905-09); professor of diseases of the chest, College of Physicians and Surgeons, University of Southern California (1914-20).

He has held many offices of honor; among them president of the Los Angeles County Medical Society (1906-07); president of the Los Angeles Clinical and Pathological Society (1923-24); president Southern California Medical Society (1912-13); president American Therapeutic Society (1914-15); president Mississippi Valley Medical Association (1917-19); president American Sanatorium Association (1924); counselor and regent of the American College of Physicians.

He is the author of several standard text books on chest diseases; among them are Pulmonary Tuberculosis; Muscle Spasm and Degeneration in Intrathoracic Inflammation and Light Touch Palpation; Tuberculin in Diagnosis and Treatment; Clinical Tuberculosis (2 editions); Symptoms of Visceral Disease (3 editions); Tuberculosis and How to Combat It.

He has been a contributor to medical journals, usually of material developed by original research. He was the first to describe the motor and trophic reflexes in pulmonary tuberculosis and their application in the diagnosis of tuberculosis; the first to describe and classify other reflexes from lung and motor (and trophic) reflex from kidney; he discovered the ability to palpate deep organs in the chest and to outline various pathological conditions by touch; he offered a classification of the symptoms of tuberculosis based upon their etiology; he made careful study of the clinical application of visceral neurology to medicine, these results being published in his book,—Symptoms of Visceral Disease.



DR. CARL A. HEDBLOM
Chicago, Ill.

Head of Department of Surgery, University of Illinois.

Dr. Hedblom, one of the world's authorities on Chest surgery, will give two clinical lectures,—one on thoracoplasty and other surgical proceedings in tuberculosis, and the second on lung cancer.

Bachelor of Arts (1907) and Master of Arts (1908) from Colorado College; graduated in medicine from Harvard Medical School in 1911; interne at Massachusetts General Hospital (1912-13); professor of surgery at Harvard Medical School of China, and chief of hospital (1913-16); chief of Section of Thoracic Surgery, Mayo Clinic (1916-24); chief of Section of General Surgery, Mayo Clinic (1919-24); professor of Surgery, University of Wisconsin (1924); chief of surgical division, Wisconsin General Hospital (1924); appointed head of the Department of Surgery, University of Illinois in 1926.

Author of forty to fifty papers on various subjects, especially on thoracic surgery.

Dr. Hedblom is one of the few masters in the difficult field of thoracic surgery.

Among the many surgical papers written by Dr. Hedblom, the following recent ones refer especially to the subject of chest surgery:—

"Uncomplicated Unilateral Bronchiectasis, Late Results of Extrapleural Thoracoplasty" (Arch. Surg., Jan., 1927).

"Non-Tuberculous Pulmonary Suppuration" (New Albany Med. Herald, Feb., 1927).

"Graded Extrapleural Thoracoplasty (Ann. Cilm., Med., May, 1926).

"Evolution of Thoracic Surgery as a Specialty" (Arch. Surg., Jan., 1925).

"Diaphragmatic Hernia, Study of 378 Cases Operated Upon." (Jour. A. M. A., Sept. 26, 1925).

DR. WILLIAM H. PARK
New York City

Chief of the Bureau of Laboratories, New York City.

Professor of Bacteriology, University and Bellevue Hospital Medical College.

Dr. Park is expected to give a clinical lecture on the tuberculous child, and also to give a public lecture on the prevention of diphtheria.

Graduated from the College of Physicians and Surgeons, New York, in 1886. Spent three years at Roosevelt Hospital and then studied abroad for eighteen months. Was in practice of treatment of diseases of the nose and throat for a year, and then accepted a scholarship under Dr. Prudden at Columbia University.

In 1893 he started the laboratory of the Health Department under Dr. Herman Biggs, with the title of medical inspector and diagnostician of diphtheria. He has remained in charge of the Health Department laboratories since that time, the number of workers having risen from three to 250. He was made Assistant Professor of Bacteriology and Hygiene at the University and Bellevue Hospital Medical College and a few years later became professor, which position he holds today.

From the time of his association with Dr. Prudden, he has been one of the foremost workers in diphtheria. He introduced the making of cultures for diagnosis, and for determining the duration of quarantine. He had charge of the production of the first antitoxin for diphtheria, and afterwards supervised the methods of refining it. He has been the leading worker in the development of prophylaxis by the use of toxin-antitoxin.

He has done extensive work on the relation of bacteria in milk to diseases of children, and especially on the relation of bovine tubercle bacilli to infantile tuberculosis. He has written one of the standard text-books on bacteriology.

At the present time he is working on an improved antibacterial serum for pneumonia, in the study of the etiology of measles, and in perfecting the antitoxin in the treatment of scarlet fever.

DR. FRANK HINMAN
San Francisco, Calif.

Clinical Professor of Urology, University of California.

Dr. Hinman, one of the leading urologists of the country, will give two lectures, one on renal tuberculosis and the other on indications of pus in the urine.

Dr. Hinman was born in 1880. He graduated in medicine from Johns Hopkins Medical School in 1906. He located in California in 1914, and has become a leader in the field of urology.

He is clinical professor of urology at the University of California Medical School; urologist-in-charge at the University of California.

He is a member of the American Urological Association; Association of Genito-Urinary Surgeons; Clinical Society of Urologists; International Association of Urologists; Fellow of the American College of Surgeons.

Among his important contributions to our knowledge of urology during the past two years may be mentioned the following:—

"Pyelovenous Backflow at time of Pyelography" (Surg. Gyn. & Obst., May, 1927).

"Movable Kidney with Kink or Angulation ver-

sus Ureteral Stricture" (with Vecki and Johnson, Cal. & West. Med., Jan., 1927).

"Treatment of Enlargement of Prostate and Results Obtained by Modification of Young's Perineal Prostatectomy." (Cal. & W. Med., Aug., 1926).

"Trigone of Bladder as Factor in Urinary Obstruction and Operative Treatment," (with Wesson, Surg. Gyn. & Obst., July, 1926).

"Renal Counterbalance" (Cal. & W. Med., March, 1926, and Arch. Surg., June, 1926).

"Indication of Nephrostomy Preliminary to Uretero-rectoneostomy" (Jour. A. M. A., March 27, 1926).

"Experimental Study of Pathogenesis of Hydro-nephrosis" (Surg. Clin., N. A., April, 1926).

"Malignant Tumors of Kidney with Special Reference to Diagnosis" (Cal. & West. Med., Apr., 1925).

"Experimental Hydronephrosis" (Arch. Surg., Oct., Nov. and Dec., 1925).

DR. LE ROY SANTE

St. Louis, Mo.

Associate Professor of Radiology, St. Louis University.

Radiologist to the City Hospital, St. Mary's Hospital and St. Louis University Group Hospital.

Dr. Sante will give the clinical lecture and demonstration on the x-ray findings in lung tuberculosis and its differential diagnosis from other chest diseases.

Dr. Sante received his medical education at Washington University, from which he graduated in 1913. He has been Associate Professor of Radiology at St. Louis University since 1919. He has been chief radiologist to the St. Louis City Hospitals since 1919; he is the radiologist to St. Mary's Hospital and the St. Louis University Hospital group; he is consultant radiologist to the Koch Hospital for Tuberculosis and St. Louis Training School.

He is a member of the American College of Radiology, the American College of Physicians, the American Roentgen Ray Society, American Radium Society, Radiological Society of North America, and many other general medical organizations.

He is the author of forty-five articles on radiological subjects, twenty-five of these being on chest diseases. Among the latter may be mentioned:

"Study of Influenza-Pneumonia by Serial Roentgen Ray Examinations," (Jour. Missouri State Med. Assn., Feb., 1921).

"Study of Hilus Pneumonia by Serial Radiographic Examination," (Jour. of Radiology, June, 1922).

"Study of Lung Abscess by Serial Radiographic Examination," (Jour. of Radiology, June, 1923).

"Study of Lobar Pneumonia and Its Pulmonary Complications by Serial Radiographic Examinations," (Amer. Jour. of Roentgenology, May, 1923).

"Clinical History and Serial Examinations in the Differential X-ray Diagnosis of Inflammatory Lesions of the Chest," (Jour. Mo. State Assn., June, 1923).

"Tuberculous Lobar Pneumonia," (Amer. Jour. Roentgenology, Jan., 1924).

"Cirrhosis of the Lung," (Radiology, Aug., 1924).

"Study of Miliary Tuberculosis by Serial Radiographic Examination," (Radiology, Dec., 1924).

"First Infection in Pulmonary Tuberculosis," (Radiology, June, 1926), and many others.



DR. JAMES T. CASE

Battle Creek, Mich.

Associate, Surgical Section, Battle Creek Sanitarium.

Professor of Roentgenology, Northwestern University, Chicago.

Dr. Case is one of the few surgeons in the country who has had, in addition, a long and honorable career in roentgenology. He is eminently qualified to speak from both the x-ray and the surgical viewpoint of medicine.

He will give two lectures, one on the radiological aspects of gastro-intestinal diseases, and the other on the surgical treatment of the same conditions.

Dr. Case was born in Texas, graduating in 1905 from the American Medical Missionary College, later merged with the University of Illinois Medical Department. He has been connected with the Battle Creek Sanitarium since his graduation in 1905, and for many years as head of the Department of Roentgenology, where his work became internationally known. He has received a diploma in Medical Radiology and Electrology from the University of Cambridge. His work on the gastro-intestinal tract, along with that of Carman and Cole, placed American roentgenology in the forefront in this specialty. He has been professor of roentgenology at Northwestern University since 1912; consultant roentgenologist of Cook County Hospital (1912-16); visiting roentgenologist to St. Luke's Hospital, Chicago (1912-17).

He was senior consultant in roentgenology for the American Expeditionary Forces, and his work during this period was recognized by election to the presidency of the American Roentgen Ray Society in 1920. He is an honorary member of the

Roentgen Society of London, the Nordisk Forening for Medicinsk Radiologi (Sweden), the Societe medical de Hopitaux de Paris.

Since the practical retirement of Dr. Kellogg, from active work, Dr. Case has been the acting chief surgeon of Battle Creek Sanitarium. He is a Fellow of the American College of Surgeons. He is the author of many articles and monographs on roentgenology and surgery.

He is an accomplished linguist, speaking Spanish fluently.

DR. DREW LUTEN

St. Louis, Mo.

Associate Professor in Clinical Medicine, Washington University.

Director of Heart Station, Washington University.

Dr. Luten will lecture on instruments of precision in heart diagnosis and the use of digitalis in heart disease.

Dr. Luten is a native of Kentucky. He graduated from the University of Kentucky (1901), taking his degree in medicine from Johns Hopkins in 1911. He was an interne at St. Francis Hospital, Pittsburgh in 1911-12; in private practice 1912-14; resident physician at Barnes Hospital, St. Louis 1914-17; served in the U. S. Naval Reserve Forces 1917-18; has served as instructor, associate and assistant professor of clinical medicine at Washington University since 1919. Is assistant physician to Barnes Hospital; director of heart station, Washington University School of Medicine; consulting physician to Frisco Hospital.

He has written extensively on heart disease, its diagnosis and treatment; among the most important of these papers are the following:

"Errors in the Diagnosis and Treatment of Heart Disease" (Medical Clinics of North America, Nov., 1920).

"The Present Status of Digitalis Therapy" (Jour. A. M. A., Jan. 1, 1921).

"Diagnosis of Abnormalities of the Heart Beat" (Rose's Physical Diagnosis, Mosby, 1922).

"Clinical Studies of Digitalis" (Arch. Int. Med., Feb., 1924, Jan., 1925).

"Use of Digitalis in Patients with Different Types of Heart Disease" (Med. Clin. of North Amer., Mch., 1924).

"Cardiovascular Disturbances from Internal Glandular Disease" (Jour. Mo. State Med. Assn., June, 1926).

DR. HARRY S. CROSSEN,

St. Louis, Mo.

Professor of Clinical Gynecology, Washington University.

Gynecologist to Barnes Hospital and St. Luke's Hospital.

Dr. Crossen, the noted teacher and author, will give a clinical lecture on uterine prolapse.

Dr. Crossen was born in Iowa, and was educated at Washington University, St. Louis, from which he took his medical degree in 1892. He served as junior interne, senior interne and assistant superintendent of St. Louis City Hospital from 1892 to 1895; then as superintendent and surgeon in charge of the St. Louis Female Hospital from 1895 to 1899; he has been in private practice in St. Louis since 1899.

He has taught in Washington University since

1901, now holding the important chair of Professor of Clinical Gynecology. He is gynecologist-in-chief to Barnes Hospital and Washington University Dispensary; gynecologist to St. Luke's Hospital; consulting gynecologist to Jewish Hospital, St. John's Hospital, St. Louis Maternity Hospital.

He is author of "Diseases of Women" (C. V. Mosby, 1907, 5th edit.), Operative Gynecology (Mosby, 1915, 3rd edit.), and of many articles on pelvic and abdominal surgery for various societies and journals.

Among the many important papers read before societies and published, may be mentioned the following:—

"Bleeding Myoma of Uterus, Management of Different Types," (Jour. Mo. M. A., Sept., 1926).

"Improvements in Operative Treatment of Uterine Retrodisplacement" (Am. Jour. Obst. & Gyn., Sept., 1925).

"Gynecological Diseases of Special Interest to the Internist" (Ann. Clin. Med., Sept., 1924).

"Radium, X-ray and Knife in Uterine Cancer" (Jour. Mo. M. A., Feb., 1922).

DR. GRANT EBEN WARD,

Baltimore, Md.

One of the younger men in American medicine, who has taken a leading place in the developments in the field of high frequency electric currents and radium therapy in surgery.

He will lecture on the use of radium in malignancy.

Dr. Ward was born in Ohio, where he received his preliminary education. He graduated in medicine from Johns Hopkins University Medical School in 1921, serving as an interne at Johns Hopkins Hospital in 1921-22, and was thereafter associated with Dr. Howard A. Kelly from 1922 until recently. He is now engaged in private practice in Baltimore in the special surgical field of diathermy and radium.

He has developed new methods for the use of radium in medicine; has improved the technic for using high frequency electric currents in surgery; has developed methods of hemostasis without suture.

Among his important contributions to the medical and surgical literature in his special field may be mentioned,—

"Recent Developments in Protective Methods and Appliances as Used in Radium Therapy," (Ward & Burnham, Am. J. Roent., Aug. 1923).

"Radium Therapy in Carcinoma of the Rectum" (Kelly and Ward, Surg. Gyn. & Obst., Nov., 1923).

"Value of Electrothermic Methods in Treatment of Malignancy" (Jour. A. M. A., Feb. 28, 1925).

"Efficient Method of Hemostasis without Suture" (Med. Jour. & Rec., Apr. 15, 1925).

"Radical Breast Operation with Endotherm Knife and Without Ligatures" (Kelly & Ward, Ann. Surg., Jan., 1926).

"Treatment of Carcinoma of Penis with Endothermy, with Method of Treatment of Metastatic Malignant Lymph Glands" (Kelly & Ward, Surg., Gyn. & Obst., May, 1926).

"Electrothermic Methods in Treatment of Malignancy" (New Orleans M. & S. Jour., Sept., 1926).

"Application of Radiology and Physiotherapy to Gynecology, etc., (Arch. Phys. Ther., July, 1926).

"Interesting Surgical Procedures with the High Frequency Electric Currents" (Med. Jour. & Rec., Nov. 17, 1926).

"Radium in Treatment of Cancer of the Cervix Uteri," (Jour. A. M. A., Nov. 20, 1926).



DR. WILLIAM W. DUKE
Kansas City, Mo.

Formerly Professor of Experimental Medicine, University of Kansas School of Medicine.

Dr. Duke will give two clinical lectures; one on the diagnosis and treatment of the Anemias, the other on the medical and surgical aspect of allergy.

Dr. Duke was born in 1883; he took his preliminary education at Yale University from which he graduated in 1904; he graduated in medicine from Johns Hopkins University in 1908; spent two years in the Massachusetts General Hospital; then two years at the University of Vienna, graduating from this institution in 1912.

He was formerly professor of experimental medicine at the University of Kansas Medical School; was a lieutenant-colonel in the Officers Reserve Corps.

He is the author of two books: "Oral Sepsis in Relation to Systemic Disease," and "Asthma, Hay Fever, Urticaria, and Allied Manifestations of Allergy."

Dr. Duke has written extensively on allergy and other subjects in internal medicine. Among the most important articles of the past few years may be mentioned:—

"Food Allergy as a Cause of Abdominal Pain" (Arch. Int. Med., Aug., 1921).

"Specific Hypersensitiveness as a Cause of Illness" (Ann. Clin. Med., Jan., 1922; J. A. M. A., Sept. 15, 1923).

"Common Causes and Effects of Allergy" (Colo. Med., Feb., 1925).

"Allergy in Its Relationship to Otolaryngology" (Arch., Otolaryng., Nov. and Dec., 1925).

"Physical Allergy as a Cause of Dermatoses" (Arch. Derm. & Syph., Feb., 1926).

"Estimation of Circulating Hemoglobin Volume" (Tr. Sect. Path. & Phys. A. M. A., 1926).

DR. FREDERICK M. ALLEN,
New York City

Director of Physiatrie Institute, Morristown, N. J.

Dr. Allen's name has become inseparably associated with the treatment of diabetes and nephritis. Dr. Allen will deliver two lectures,—one on hypertension and nephritis and the second on diabetes.

He was born in Iowa, and received his education in California, graduating from the University of California in 1902, and from the medical department of the same school in 1907. He served as an interne at the University Hospital, San Francisco (1907-08); then in general practice for a year; was research fellow at Harvard Medical School from 1909 to 1912; associate in medicine at the Rockefeller Institute Hospital from 1913 to 1918; established the Physiatrie Institute at Morristown, N. J., and has been its director since 1919. He was in charge of the diabetic service of General Hospital No. 19 during the World War.

He has become noted for his research work as well as his clinical work in connection with diabetes, hypertension and nephritis; for his advocacy of treatment of diabetes by limitation of total calories and body weight (the "Allen Treatment"); of restriction of sodium chlorides in treatment of hypertension; studies of hydropic degeneration of islands of Langerhans; influence of fat in diabetes; of partial nephrectomy and other renal deficiencies in animals.

He is a member of the Association of American Physicians, American Society of Experimental Pathology; American Physiological Society, Harvey Society, etc.

Among his many writings are "Studies Concerning Glycosuria and Diabetes" (Harvard Univ. Press, 1913); "Total Dietary Restriction in Diabetes" with Stillman and Fritz (Rockefeller Inst. Monograph No. 11); the chapter on diabetes in Nelson's Loose Leaf Medicine; "Treatment of Kidney Disease and High Blood Pressure", 1925.

Among his papers of the past two years are the following:

"Nephritis" (Ill. Med. Jour., May, 1926).

"Renal Vascular Disease; Nature and Treatment" (Ibid. Nov., 1926).

"Experimental Studies in Diabetes" (Jour. Metabolic Research, Nov.-Dec., 1923).

"Hypertension and Treatment of Nephritis" (N. Y. State Jour. Med., May, 1925).

"Practical Treatment of Diabetes" (Calif. & West. Med., Oct., 1925).

"Nephritis, Hypertension and Arteriosclerosis" (J. Ind. M. A., Dec., 1925).

DR. GEORGE A. WYETH
New York City

Endothermist, Skin Department, Vanderbilt Clinic, Columbia University.

Endothermist to Skin Department, Cornell Medical School.

Dr. Wyeth, a noted surgeon, working exclusively in the field of neoplastic diseases, will lecture on the radio knife and electrothermic methods in the treatment of cancer. He has been a leader in this comparatively new field of surgery.

Dr. Wyeth, a native of Missouri, took his preparatory education at Vanderbilt University, Nashville; he received his medical degree from the University of Pennsylvania in 1903, after which he did postgraduate work in Berlin, Vienna and London.

He is endothermist to the Vanderbilt Clinic, to the College of Physicians and Surgeons, to Columbia University, and to the skin department of Cornell Medical School.

He is the author of a standard work on this subject, namely, "Endothermy, the New Surgery in Accessible Cancer and Precancerous Diseases."

Among the most important contributions of Dr. Wyeth to the literature of this special field in the past five years may be mentioned the following:—

"Surgical Endothermy in Malignancy and Precancerous Conditions" (New York Med. Jour., Oct. 5, 1921).

"Surgical Endothermy in Accessible Malignancy" (New York Med. Jour., Dec. 21, 1921).

"Endothermy" (N. Y. Med. Jour., Apr. 19, 1922).

"Endothermy in Accessible Malignancy and Precancerous Conditions" (Surg., Gyn. & Obst., May, 1923).

"Endothermy in Treatment of Accessible Neoplastic Diseases" (Annals of Surgery, Jan., 1924).

"Endothermy, the New Surgery, as Applied to Accessible Epidermoid Carcinoma" (Boston M. & S. J., Oct. 9, 1924).

"Newer Developments of Electrothermic Methods in Treatment of Neoplastic Diseases", (Surg. Gyn. & Obst., Jan., 1927).

DR. JOHN McMULLEN

New Orleans, La.

Dr. McMullen will deliver a lecture on pub-

lic health at an evening session, being detailed direct from the Surgeon General's office in Washington for this purpose. The title of the lecture will be "Civic Righteousness and Sanitation." This will be one of a series of three lectures arranged especially for the public health officials of the southwest.

Information of this appointment by the Surgeon General was received too late to secure biographical data about Dr. McMullen.

DR. WALTER BERNARD COFFEY, San Francisco, Calif.

Chief Surgeon, Southern Pacific Railway.

Chief of Staff, Southern Pacific Hospital.

Acceptance by Dr. Coffey of the invitation to bring to this Congress, his lecture on the sympathetic cervical ganglia and their relation to angina, was received too late to secure biographical data for this issue.

Dr. Coffey has spoken to the El Paso County Medical Society and to the Arizona State Medical Association on this subject, as well as to many other medical bodies in this country and abroad. The material has not yet been published, and we are fortunate in being able to secure this presentation for a larger group in the southwest.

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PROGRAM

It has been found impossible to announce at this time, six weeks in advance of the meeting, the final details of the program, or the completed personnel of the group of lecturers. The following tentative program is given, subject to such changes as circumstances may demand. A final program will be mailed out about October 15th.

WEDNESDAY, NOVEMBER 2, 1927

FORENOON

- DR. FRANCIS MARION POTTENGER, Monrovia, Calif.
"The Diagnosis of Clinical Tuberculosis."
 DR. WILLIAM H. PARK, New York City.
"The Problem of the Tuberculous Child."

AFTERNOON

- DR. FRANCIS MARION POTTENGER, Monrovia, Calif.
"The Problem of the Tuberculous Child."
 DR. CARL A. HEDBLUM, Chicago, Ill.
"Surgical Methods in Tuberculosis and Allied Conditions; Thoracoplasty, Pneumolysis, Phrenicotomy."
 DR. FRANK HINMAN, San Francisco, Calif.
"Genito-Urinary Tuberculosis."

WEDNESDAY EVENING

Public Health Lecture

- DR. WM. H. PARK, New York City.

THURSDAY, NOVEMBER 3, 1927

FORENOON

- DR. CARL A. HEDBLUM, Chicago, Ill.
"Cancer of the Lung."
 DR. WILLIAM W. DUKE, Kansas City, Mo.
"Diagnosis and Treatment of the Anemias."

AFTERNOON

- DR. GRANT EBEN WARD, Baltimore, Md.
"Type, Period and Location of Cancer Indicating Radium."
 DR. JAMES T. CASE, Battle Creek, Mich.
"Cancer of the Intestinal Tract."
 DR. FRANK HINMAN, San Francisco, Calif.
"Indications of Pus in the Urine."

THURSDAY EVENING

Public Health Lecture

- DR. WM. H. PARK, New York City.

FRIDAY, NOVEMBER 4, 1927

FORENOON

- DR. GEORGE A. WYETH, New York City.
"Extension of the Surgery of Neoplastic Diseases by Electrothermic Methods."
 DR. FREDERICK M. ALLEN, New York City.
"High Blood Pressure."

AFTERNOON

- DR. DREW LUTEN, St. Louis, Mo.
"Mistakes in Cardiac Diagnosis and Treatment."
 DR. WM. B. COFFEY, with DR. JOHN HUMBER and DR. PHILIP KING BROWN, San Francisco, Calif.
"Sympathectomy for Angina."
 DR. HARRY A. CROSSEN, St. Louis, Mo.
"Systematized Treatment of Uterine Prolapse."

FRIDAY EVENING

Public Health Lecture

- COL. JOHN McMULLEN, Senior Surgeon,
 United States Public Health Service,
 New Orleans, La.
"Civic Righteousness and Sanitation."

SATURDAY, NOVEMBER 5, 1927

FORENOON

- DR. JAMES T. CASE, Battle Creek, Mich.
"X-ray and Surgical Methods in Gastro-Intestinal Lesions."
 DR. FREDERICK M. ALLEN, New York City.
"Diabetes."

AFTERNOON

- DR. WILLIAM W. DUKE, Kansas City, Mo.
"Medical and Surgical Aspects of Allergy."
 DR. LEROY SANTE, St. Louis, Mo.
"Radiological Findings in Lung Tuberculosis and Allied Conditions."

SATURDAY EVENING

Jaurez After Dark with

El Paso County Medical Society

DR. J. M. RICHMOND

Dr. J. M. Richmond of El Paso died at Masonic Hospital the afternoon of August eighth, an hour after an auto accident in which his car was overturned, pinning him beneath it. Dr. Richmond walked into the hospital, the only apparent injury being a dislocated elbow. The dislocation was immediately reduced under a light general anesthesia and Dr. Richmond was returned to his bed. He had regained consciousness and was talking but a few moments before death came. Autopsy examination revealed an occluded coronary artery from extensive sclerotic changes.

The funeral, one of the largest in El Paso's history, was held from St. Clement's Episcopal Church at 4 p. m. on August the tenth, Rev. Williams reading the service at the church. The services at the grave were in charge of the Masonic Order.

For twenty-four years Dr. Richmond has been in the fore rank of the El Paso profession. He did an enormous practice and was beloved by his patients and his colleagues. At the time of his death he was Chief-of-Staff of the Masonic Hospital, Assistant Division Surgeon of the Southern Pacific Lines, Pacific System, Local Surgeon Southern Pacific Lines, Atlantic System, a Fellow of the American Medical Association, a Fellow of the American College of Surgeons, Member of the Texas State Medical Association, The Southern Medical Association, The Medical and Surgical Association of the Southwest, the El Paso County Medical Society and the Association of Railway Surgeons of Texas.

He was born in Independence, Mississippi, about sixty years ago and spent his early childhood there. When he was twelve years old, his parents moved to Manor, Texas. Receiving his degree in medicine from the University of St. Louis in 1892, he began the practice of his profession in Edna, Texas, the same year. He practised there until coming to El Paso in 1903.

He did post-graduate study in Tulane, New York Post-Graduate, Harvard and Johns Hopkins, and was a member of the American Tour that visited European clinics in 1925.

He was married to Miss Marie Bronaugh in 1894. She, with their son, W. B. Richmond, survives him. Besides his immediate family, Dr. Richmond is survived by

his grand-daughter, Laura Louise Richmond; two brothers, W. L. of Marfa, Texas, and Robert B. of Marathon, Texas; and four sisters, Mrs. Atlas Jones of Uvalde, Texas, Mrs. H. C. Friscoe of Donna, Texas, Mrs. Winnie Wolf of Corpus Christi, Texas, and Mrs. Genis Callahan of Galveston.

Early in his career Dr. Richmond affiliated himself with Masonic Lodge No. 767 of Edna, Texas, of which he was past master. At his death he was a 32nd degree Mason, a Shriner and a member of all the Masonic bodies of El Paso.

ST. JOSEPH'S SANATORIUM OPENED AT EL PASO

St. Joseph's Sanatorium was opened in El Paso by the Sisters of St. Joseph, September first. They recently purchased the Baldwin Sanatorium and nine acres of ground belonging to the same estate. Fifty thousand dollars has been spent in renovations, repairs and additions, to the end that it is now thoroughly modern and completely appointed.

The main building is a stone structure with eighty-six suites for patients, six rooms for business and medical administration, chapel, reception room, kitchen plant, etc. The annex of twenty-eight suites will not be opened at this time.

The open porches and roof garden are ideal for heliotherapy, which is to be a feature of the treatment offered by the sanatorium. The remaining porches are glassed in.

The Sisters of St. Joseph have hospitals and schools through the central states of Kansas, Missouri, Michigan and others. They will draw a clientele not heretofore attracted to El Paso or the Southwest, and the outlook for their new venture is most encouraging. Sister Mary Ursule is the Superior and will have a community of five Sisters as a beginning.

Dr. Orville Egbert is the medical director.

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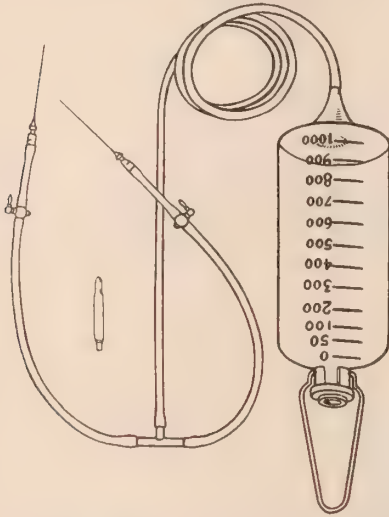
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Post graduate instruction offered in all branches of medicine. Courses leading to a higher degree have also been instituted.

A bulletin furnishing detailed information may be obtained upon application to the

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IMPROVED HYPODERMOCLYSIS OUTFIT



In the Long Island Medical Journal for June, 1927, Dr. Augustus Harris of Brooklyn describes an improved hypodermoclysis outfit which overcomes the faults of the ordinary apparatus, such as kinking of the tubing, leaking of fluid, inadequate means of connecting needles, etc. The apparatus (here illustrated) can be used for intravenous injections, and is adapted for Fordyce needles as well as Luer needles.

The outfit is manufactured by Becton, Dickinson & Co., Rutherford, N. Y.

ARIZONA PERSONALS

DR. and MRS. ROBERT W. CRAIG, of Phoenix, have returned from Honolulu, where they spent the summer. Dr. Craig has resumed his practice in Phoenix and the oversight of the building of his new palatial residence on the Country Club tract.

DR. E. PAYNE PALMER and family, of Phoenix, left September 15th for Dayton, O. After a few days there, where they will attend the marriage of Mrs. Palmer's niece, Dr. Palmer will visit Chicago as the guest of Dr. Franklin Martin, and the first of October will attend the convocation of the College of Surgeons in Detroit. He expects to be gone from Phoenix about a month.

DR. CHARLES S. VIVIAN, of Phoenix, has returned from a month's visit to points on the coast.

While on vacation, he took occasion to visit various clinics and personal friends among the urologists of the coast cities.

DR. MARY LAWSON NEFF, of Los Angeles, will resume her periodical visits to Phoenix, for consultation work, October 1st. She will be at the Hotel Adams from October 1st to 4th, for consultation in functional and organic nervous diseases and developmental problems of childhood.

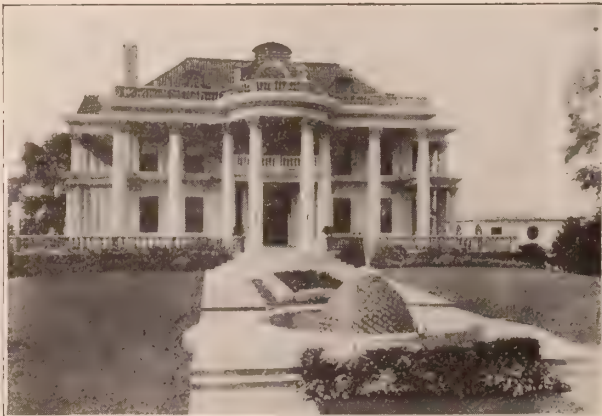
DR. R. J. STROUD, of Tempe, who has been convalescing from a serious illness, will return to his practice in Tempe about October 1st. He has been spending several weeks at Ocean Park and other coast cities, recovering his usual vigor after his illness of a month or more ago.



"THE COUNTRY DOCTOR"

Cecil B. De Mille and the Pathe Exchange, Inc., have produced a motion picture film, dedicated to the doctors of America, and which is a tribute to the medical profession. The famous character actor, Rudolph Schildkraut, plays the part of the doctor. The accompanying view is one of the scenes in the film picture. It will be seen that it is an almost exact reproduction of Luke Fildes' noted painting "The Doctor."

As this film appears in the leading cities through the country and, later, in the smaller towns, it should do much to increase the respect in which the profession is held, and offset many of the false ideas which the enemies of medicine delight to spread.



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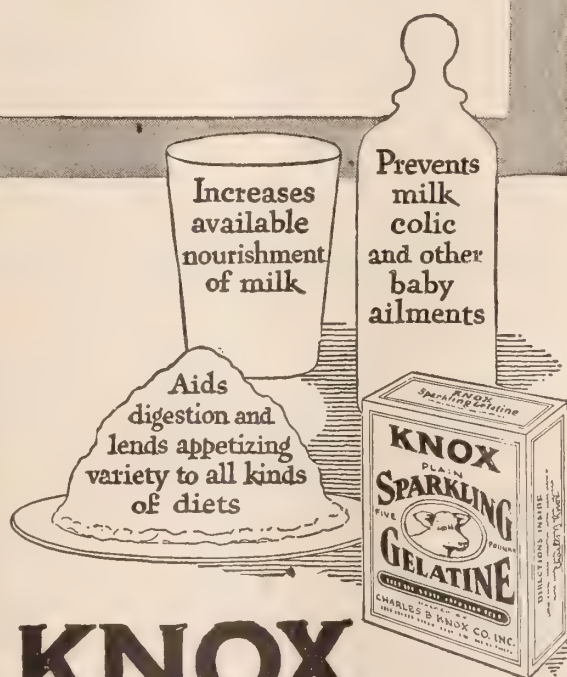
May we, therefore, ask permission to send you the full reports of what has been accomplished by adding Knox Sparkling Gelatine-to-milk in the baby's formula? Not only does its protective colloidal action modify the curds which often cause digestion disturbances, *but it also increases the available nourishment* of the milk and helps the child quickly to attain and maintain normal weight.

The method is as follows:

Soak, for about ten minutes, one level tablespoonful of Knox Sparkling Gelatine in one-half cup of milk taken from the baby's formula; covering while soaking; then place the cup in boiling water, stirring until gelatine is fully dissolved; add this dissolved gelatine to the quart of cold milk or regular formula.

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THE AMERICAN COLLEGE OF SURGEONS

The American College of Surgeons will hold the seventeenth Clinical Congress in Detroit, October 3-7. Headquarters will be at the Book-Cadillac and Statler hotels, and the meetings will be held at the Statler Hotel, and Orchestra Hall. The Hospital Standardization Conference will extend from Monday morning to Thursday afternoon and will include a discussion of hospital and nursing problems and hospital demonstrations. Monday evening's program will include an address of welcome by the local Chairman, the address of the retiring President, the inaugural address of the New President, and the John B. Murphy oration. Clinics in general surgery will be held in Detroit hospitals each morning from Tuesday to Friday, and in Eye, Ear, Nose and Throat work the same afternoons. Clinics will also be held at University Hospital, Ann Arbor, Tuesday to Thursday. On Tuesday and Wednesday mornings and afternoons and on Thursday morning, clinical demonstrations will be held at the Statler Hotel (mornings) and Orchestra Hall (afternoons). On Thursday afternoon the annual meeting of the Governors and Fellows will be followed by a cancer symposium. On Friday afternoon there will be a symposium on traumatic surgery, to be participated in by leaders in industry, labor, indemnity organizations, and the medical profession. On Tuesday evening the program will take the form of a celebration of the Lister Centennial. On Thursday evening there will be a large Community Health Meeting in the Masonic Temple, and on Friday evening the Annual Convocation of the College. Other outstanding features will be the exhibits. In addition to the commercial exhibits there will be a replica of the Lister exhibit at the Wellcome Museum of Natural History, London, including Lister's operating rooms and hospital wards. The Departments of Hospital Activities, of Literary Research, and of Clinical Research of the College will also present exhibits. Among the foreign guests will be Sir John Bland Sutton, England; J. M. Munro Kerr, Scotland; Gordon Craig, Australia; Gustaf E. Es-sen-Moller, Sweden; S. A. Gammeltoft, Denmark. The retiring President is W. W. Chipman, Montreal, and the President to be inaugurated George David Stewart, New York. The Lister oration will be delivered by W. W. Keen, Philadelphia. The Chairman of the Detroit Committee on Arrangements is Alexander W. Blain.

Horlick's Milk Modifier, a new product made by the Horlick's Malted Milk Corporation, Racine, Wisconsin, is now being introduced to the medical profession. This maltose and dextrin product, which is derived exclusively from malted grains, was first announced at the annual meeting of the American Medical Association in Washington, D. C., in June, and created much interest. Since that time it has been presented to convention gatherings in other parts of the country, and the Horlick representatives are now calling on individual members of the profession.

Horlick's Milk Modifier is presented and supplied to the profession along ethical lines. No feeding directions accompany the package. A statement on the wrapper is to the effect that the product is for prescription by physicians only.

In conformity with the Horlick policy, the Milk Modifier is put up in hermetically sealed glass jars only. The one-pound size retails at \$.75 and the five-pound jar at \$3.00. The fact that it carries the name "Horlick's" is a guarantee that only the finest materials are used.

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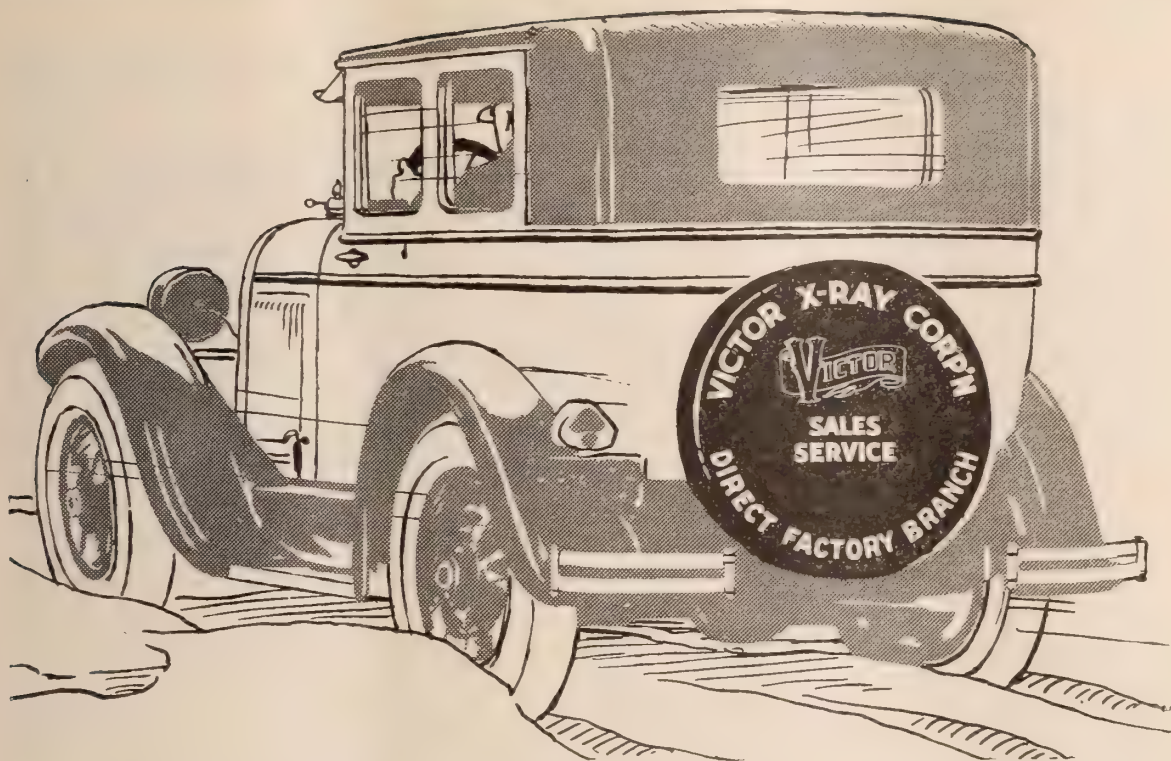
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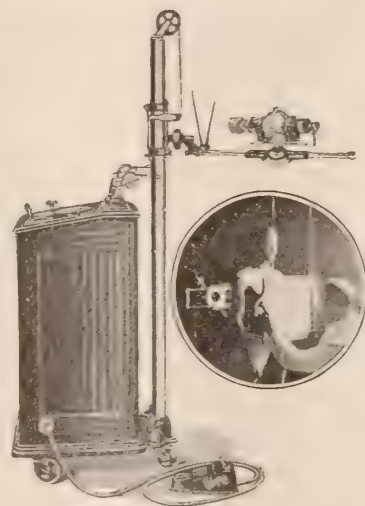
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American Medical Association, under the heading of New and Non-official Remedies the acceptance of the Horlick Milk Modifier was announced by the American Medical Association. The product differs from the malt sugars in that it incorporates soluble and readily assimilable protein and valuable mineral salts from the grains. The Horlick firm points out this fact as a decided advantage for its product.

Another point which is mentioned as an advantage in favor of the new product is the proportion of its two chief carbohydrates, maltose and dextrin, which are 63% maltose and 19.5% dextrin.

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Samples of the new product, literature concerning its use, prescription blanks and file cards giving methods of preparation are available for members of the Medical Profession and will be sent upon request.

TRUTH ABOUT MEDICINES

NEW AND NON-OFFICIAL REMEDIES

The Joy Beans Laboratories Fraud. One Frank Beland of Cairo, Illinois, exploited an independent piece of quackery under such trade names as "Joy Beans Laboratories" and "Beland Laboratories," selling a preparation called "Joy Beans" as a sexual tonic. Beland had no medical or professional training; his nostrum was put up for him by Eli Lilly and company, Indianapolis. Beland's exploitation of this aphrodisiac was found fraudulent by the post office authorities and was barred from the use of the mails. (Jour. A.M.A., July 16, 1927, p. 225).

Pancreols. In the advertising of the Drug Product Co., Inc. Pancreols (formerly called Insulols) are claimed to be rectal suppositories "Containing Specially Prepared Desiccated Pancreatic Hormone-bearing Substance Containing the Active Principle of the Islands of Langerhans." In effect this preparation offers insulin for rectal administration. Scientific evidence has not been offered for the value of this product. The rectal administration of insulin has been found of little or no value, as compared to the subcutaneous route, against glycemia, glycosuria or acidosis. The rectal administration of insulin belongs to the class of methods which are "either mechanically difficult, inconclusive, inconstant, or wasteful of the drug." No preparation of the Drug Products Co., Inc., has been accepted by the Council on Pharmacy and Chemistry for inclusion in New and Nonofficial Remedies. A number of this firm's products have been reported on unfavorably, namely; Pulvoids Calcylates, Pulvoids Calcylates Compound, and Pulvoids Natrium Compound. (Jour. A.M.A., July 16, 1927, p. 229).

More Misbranded Nostrums. The following products have been the subject of prosecution by the federal authorities charged with the enforcement of the Food and Drugs Act: Vitona (Vitona Mineral Ore Co.), consisting of a crude silicate ore containing iron sulphate, free sulphur and charcoal, with traces of calcium, magnesium and aluminum sulphate. McMichael's Allgland with Radium (Carnotite Gland Extract company), tablets containing 91 per cent of milk sugar, together with talc, a trace of nitrogenous organic matter and a faint trace of radium. Allfood with Radium (Allfood Laboratories), consisting of about 86 per cent milk sugar and 14 per cent of material insoluble in water, comprising mainly talc, mineral matter, and a small amount of animal glandular tissue. Each tablet contained about 0.09 millimicrograms of radium. Brooten's Kelp Ore and Brooten's Kelp Ore Liquid (Kelp Ore Remedies Corporation). The first was found

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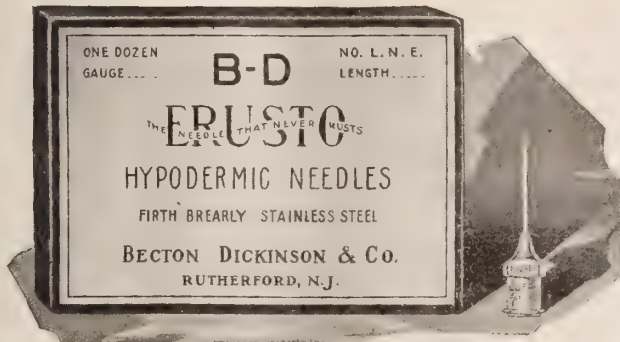
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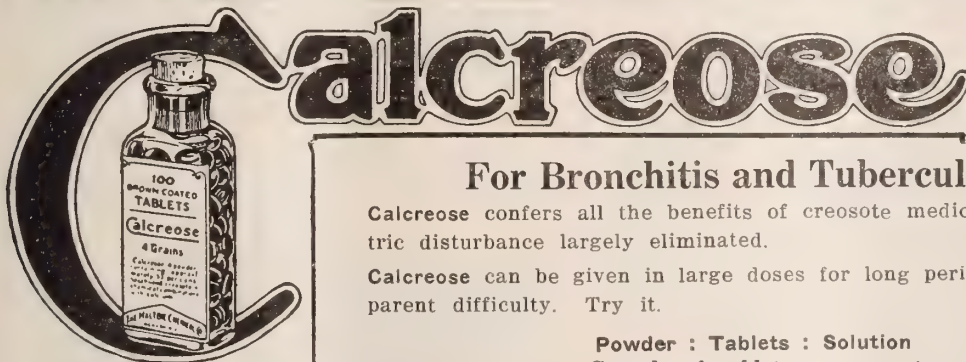
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to be a shale-like clay containing iron and aluminum sulphates, and a trace of sulphur, while the "Liquid" was a water solution of iron and aluminum sulphates, with traces of calcium, magnesium and potassium salts. (Jour. A.M.A., July 23, 1927, p 310).

Cultures of Lactic Acid Producing Organisms. Pseudoscientific promotion of lactic acid producing it approaches outspoken quackery. The Council on it approaches outspoken quackery. The Council on Pharmacy and Chemistry of the American Medical Association has attempted from time to time to issue conservative, tolerant statements regarding the status of the uncertain lactic acid bacillus therapy. Furthermore, it has endeavored to establish the conditions under which alone, if at all, actual implantation effects can be expected. Thus, acidophilus milk and broth cultures and concentrates of *B. acidophilus* are not considered acceptable unless the number of viable organisms contained in a stated quantity is clearly stated, and the broth cultures and concentrates are made to indicate the need of the coincident administration of carbohydrates. The wisdom the Councils cautions is indicated by the recent investigations of James in the microbiologic laboratory of the Bureau of Chemistry, U. S. Department of Agriculture. This survey of a number of marketed preparations indicated that samples representing cultures of both *B. acidophilus* and *B. bulgaricus* are not infrequently worthless. As was anticipated, the milks showed the highest average counts, the whey cultures next to the highest, and the solid cultures the lowest. (Jour. A. M.A., July 30, 1927, p. 374).

Foods in Diabetes. A generation ago the chief concern in the management of diabetes was centered in the reduction of the carbohydrate intake; consequently, in the choice of articles of diet preference was given to those relatively poor in sugars and starches. The expression "diabetic food" came into vogue to designate a variety of products, having in common a content of carbohydrate notably below that of ordinary products of the same class. An official definition was formulated by governmental authority, permitting the application of the term diabetic to indicate that a food contains "not more than half as much glycogenic carbohydrates as the normal food of the same class." The outlook on the dietotherapy of diabetes has been considerably altered in more recent years. It is no longer merely the carbohydrate in the food that merits attention. Sugar can be formed from protein. Regulatory officials have become inclined to discourage the use of the term diabetic as a part of the name of these special foods. Accordingly there is no longer any federal definition of a diabetic food. Since such products are offered as dietetic aids in the control or mitigation of disease, they are regarded by food control officials as therapeutic agents rather than as foods and more properly regulated under the provisions of the Food and Drugs Act which refer to drugs. E. M. Bailey, the chemist of the Connecticut Agricultural Experiment Station, has also abandoned the term "diabetic food." In his latest report he remarks that successful diets for patients with diabetes may be formulated by proper selection of common foods quite as well as by the use of special foods. He states that many of the latter serve useful purposes but are expensive. The utilization of common foods is of increasing interest to the physician and to the patient. (Jour. A. M.A., July 30, 1927, p. 376).

More Misbranded Nostrums. The following products have been the subject of prosecution by the federal authorities charged with the enforcement of the Food and Drugs Act: Sexvitor (Joseph A. Piuma), tablets consisting essentially of strychnine, a phosphorus compound, a laxative plant drug extract, and some animal matter. Rider's Eucalyptus Oil Compound (Dr. G. H. Rider company), essentially

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petroleum oil flavored with sassafras. Moore's Liver-Ax (The Mount Grove Grocery Company), an extract of laxative plant drugs in a mixture of water and alcohol. Genitol (Brewer and Company, Inc.), containing 18 per cent alcohol, about 2 per cent mineral matter, sugar and glycerin. Nervo-Vital (Brewer and Company, Inc.), consisting of alcohol, glycerin, sugar, mineral matter, and a small amount of strychnine and nitrogenous matter, together with some water. (Jour. A. M. A., July 30, 1927, p. 390) Colloidal Kaolin in Intestinal Toxemia. Suspensions of colloidal kaolin are of little or no use in the treatment of intestinal toxemias. Colloidal kaolin chiefly absorbs basic substances from acid mediums. Alkaline fluid liberates the basic substance from its absorption compound. Hence much absorption in the alkaline intestines could hardly be expected. In practice, colloidal kaolin has been disappointing. (Jour. A. M. A., July 30, 1927, p. 393).

Rickets.—"As the result of laboratory and clinical investigations our interest now centers around the phosphorus ion in the study of the metabolism of rickets. A low phosphorus diet produces rickets in the rat; a low blood inorganic phosphate accompanies active rickets in the infant. Therapeutic measures raise the blood phosphate. Sunlight and ultra-violet light from artificial sources applied to the rat or the infant will cure or prevent rickets. Cod liver oil has a similar curative and preventive

action. Inert substances, such as linseed and cottonseed oils, have been rendered active antirachitic agents after irradiation with ultraviolet light. The factor in cod liver oil and irradiated oils that is responsible for the cure of rickets is separate and distinct from the fat-soluble A vitamin." (Author's summary.)

Recent Phases of the Rickets Problem. L. Von Meysenbug, A. B., M. D., Instructor in Pediatrics, Tulane University, New Orleans; Sou. Med. Jour., July, 1926, p. 522.

THE SURGICAL CLINICS OF NORTH AMERICA (Issued serially, one number every other month). Volume 7, number 3 (Chicago Number—June, 1927.) 330 pages with 81 illustrations. Per clinic year (February, 1927, to December, 1927.) Paper, \$12.00; Cloth, \$16.00 net. Philadelphia and London: W. B. Saunders Company.

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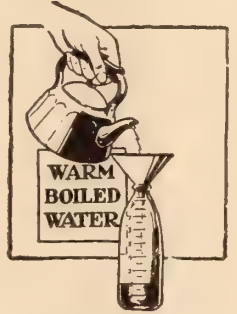


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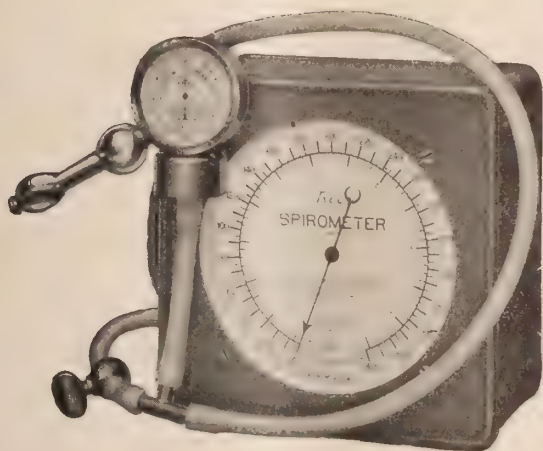
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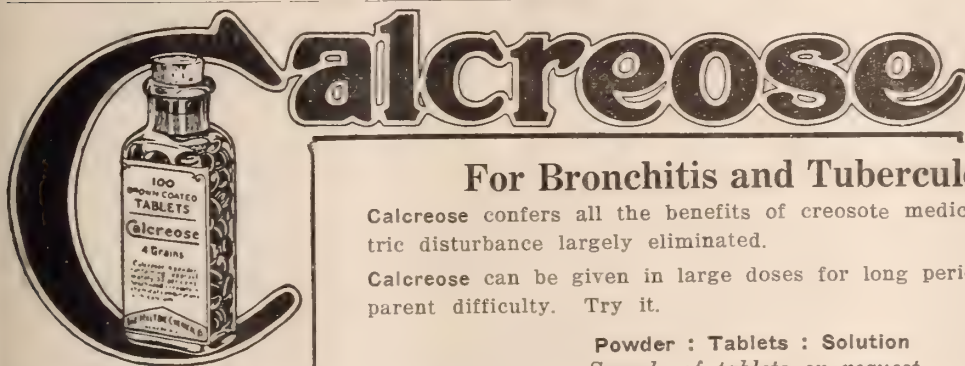
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POST GRADUATE STUDY IN THE COUNTY MEDICAL SOCIETY

(Foreword)

The most unique development in the work of the county medical society, in Arizona, has been the plan evolved by the Yavapai County Medical Society and the Medical Staff of the Veterans' Bureau Hospital at Whipple. This plan is explained in detail below and an illustrative discussion given in full, first the discussion by the selected group from the society and staff, and then, for comparison, the discussion of Dr. Cabot, followed by the autopsy report.

THE YAVAPAI COUNTY MEDICAL SOCIETY PLAN OF POST-GRADUATE STUDY—HISTORICALLY CONSIDERED

C. E. YOUNT, M. D.
Prescott, Arizona.

GALE D. ALLEE, M. D.
Medical Officer in Charge, United States Veterans Hospital, Whipple, Arizona.

It is over 2400 years since Hippocrates stated, "The physician must know what others have known or he is constantly liable to deceive both himself and others." This axiom is as true today as when propounded. In conformity with the spirit of medical progress our society holds that the physician must not only know what others have known, but must know what others know. It was with this idea of keeping our members in touch with the progress in medicine that our society evolved the plan to be described later.

In presenting a brief history of the events which led to our present plan we are without ostentation. Rather, let it be said, we ask your indulgence while we recount our struggles to attain a plan of post-graduate study which has been exceedingly helpful and, through the co-operation of the medical

officers at Whipple, most successful. In chronicling these events we are, in our humble way, paying a debt to medical history, and perchance we may thereby encourage others to take up this plan of study.

The federation of state associations, known as the American Medical Association, occurred in 1847. Its activities during the first fifty years of its existence were largely confined to "discussion rather than accomplishment." Since its reorganization at St. Paul, in 1901, membership in the Association has been based upon membership in the state medical societies, which are, again, based upon membership in the county societies. Among its many worthy objectives since reorganization, we stress the promotion and standardization of medical education.

The Arizona Territorial Medical Association was organized in Phoenix, May 25, 1892, with Dr. J. A. Miller, president, and Dr. J. T. Green, secretary. During the first ten years membership in the Association was direct, the Judicial Council reporting "favorably" upon the application. At the annual meeting held in Tucson, May 28, 1902, it was voted "that the Association reaffirm its allegiance to the American Medical Association as to reorganization." While the published minutes do not specifically so state, it is our opinion that the Arizona Medical Association underwent such reorganization as was required to conform to the plan of the re-organized American Medical Association. Further, we note that at the Twelfth Annual Meeting of the Arizona Medical Association, held in Tucson, April 22, 1904, the first definite step was taken to organize and affiliate county societies, when its committee on By-Laws, Drs. A. W. Olcott, Ancil Martin and C. E. Yount, "recommended that county societies be at once formed, that we may comply with the

requirements of the American Medical Association."

Prior to 1904, there were several county medical societies in the Territory of Arizona, one of which was in Yavapai County, but none of these were affiliated with the Arizona Medical Association—hence, to secure uniformity of organization, it was necessary to re-organize the few county societies then existing.

Dr. B. T. Davis, the last president of the old Yavapai County Medical Society, authorized the writer to issue the following call: "In accordance with the wish of the American Medical Association and the sentiments of the last Territorial Medical Association meeting, we have deemed it advisable to organize the Yavapai County Medical Society in conformity with the standard laid down by the American Medical Association, and to this end we extend to you a most cordial invitation to meet with us in Prescott on Saturday, June 18, 1904." We received our charter, dated Oct. 25, 1904, and were complimented by the Secretary of the Arizona Medical Association "as being the first county to organize, having the largest enrollment and the greatest enthusiasm." We adopted the constitution for county societies prepared by the American Medical Association, and in compliance with the provisions of its progressive measures, we began to prepare "attractive programs for each meeting—and urged each member to take part in the scientific work." In furthering this idea we used the outline in the Councilor's Bulletin of the American Medical Association, first, in 1906, in what we called our Chautauqua idea. However, it was found necessary to modify it greatly to make it at all workable for a society which could not hope to muster more than seven or eight regular attendants at any meeting. For the next five years our society's scientific committee prepared the programs, which we followed as faithfully as such a small number of busy doctors could, each year showing progress in scholarship and improvement in method. The year 1912 was a propitious one for Arizona—we were received into the sisterhood of States, and doubtless feeling the urge for bigger things, the scientific committee of the Arizona State Medical Association, consisting of Drs. W. W. Watkins, John W. Flinn and I. E. Huffman, outlined a brilliant course of study for county societies, based on a modification of the course prepared by the American Medical Association. They circularized the doctors of the state as follows: "During the month of November (1912), the county societies

will study Infections, including infectious diseases, localized and general infections, chronic bacterial infections, etc. The program for these studies will be based on clinical cases reported to the undersigned committee of the Association. In order that this program may be as comprehensive as possible, and of universal interest, we wish doctors from all parts of the state to report to us their interesting cases of infections and infectious diseases. Upon these reports received by us BEFORE OCT. 15th, the program will be based. This program will be distributed to every doctor in the state for study in his society or at home.

"The program will consist of:

1. The outline of topics to be studied, as suggested by the case histories;
2. The case histories received before Oct. 15th;
3. References to articles in current literature on the topics of the program;
4. Abstracts of the most pertinent article recently published in the bulletin for December, a resume of the studies and of the discussion in the various societies will be given.

"What is wanted, NOW, is for you, Doctor, to sit down and write us on the attached sheet the history of a case of infection, which will suggest an interesting topic for society meetings."

Our files show that ten histories were edited, printed and sent out to the doctors for the November meetings, together with a Bulletin giving a most elaborate outline covering the four weekly meetings for the month. The Bulletin stated that for December "the program will be Injuries to bones and joints—also if the societies like this plan, they will endorse it by sending in histories for December. Remember that if case histories are not received, the Committee will abandon the plan, as it will be sufficient evidence that the County Societies prefer to formulate their own programs." The answer! Only two case histories were received; the program for December was not published. As I look back 15 years I wonder how such an erudite plan could have failed—the correspondence and editorial work which it entailed was enough to have kept a corps of workers busy, yet Dr. Watkins alone carried on, slaving for us, in the hope that each member of the State Association might receive some good from this united scientific study. Will you pardon me if I again quote, from the records, Yavapai's stand: "Dear Dr. Watkins: I am authorized to convey to you the sin-

cere appreciation of our society for the thorough and painstaking work you have done in arranging for the post graduate course for the county societies and the presentation and study of case histories. Not only do we feel the spirit of kindred studentship, as each Tuesday night we pursue together the same subjects which we know our brother physicians throughout the state are discussing, but we also feel that we are experiencing more intense interest and a greater good by the co-operative method than we have hitherto experienced. We desire to convey to you our thanks for the very great personal effort which such extensive work has placed upon you and we pledge you our hearty support."

The plan failed to go over because of inertia in the county societies—they lacked the will to do—a case of Love's Labour Lost! No, let us consider Dr. Watkins's effort as comparable to Haller's, although the latter's "supreme contribution was his voluminous work on the history and literature of surgery, yet his important accomplishment, in Mumford's view, was 'his teaching surgeons how to study' and by his example he did more even than by his preaching." (Royster.)

Dr. Watkins sought criticism of the plan several months before it was published. We quote a portion of one critique because, though sadly true, it brings before us a concrete objection of a type we had not known existed, displaying a selfish trait of character which our plan would seek to destroy in its incipency should it ever appear. In presenting his case history before the County Medical Society, the doctor had taken great pains to make it clear that the patient was a brother physician. "I made as careful recitation of the case as I could and begged for help." No help was forthcoming, so after the meeting he sought out one of "our oldest and staunchest members. I asked him why it was that so interesting a case and one that should have our augmented thought on account of the patient being a doctor, had fallen so flat. Then I heard some words of practical wisdom; I'll try to repeat his message: 'Young man, you have much to learn. Not the least of the things years have taught me is that brains and efforts should be rewarded. I have spent many years in laying by a store of knowledge and experience. This has cost me work and money. It is worth money. I can solve your problem, but I cannot solve it gratis. My fee for consultations is \$10.00, and these medical society dodges to sponge my opinion and advice gratis is one bait I do not nibble at.' This in the year of our Lord 1912!"

The Yavapai County Medical Society continued with its post graduate work, developing and trying out several methods. In 1914 we devoted ten meetings to post graduate study, with an average attendance of the Prescott members of 71.4 per cent, using a system of marking much more strict than we do today.

In 1915 we discovered the value of the Cabot Case Records and Postmortem reports, when adapted to county society post graduate study, using them first on September of that year.

The world war now began to levy on our time and personnel and until 1920, when we were again permitted to enjoy the blessings of peace and the pursuit of happiness, little was done by the Society in post graduate work. In his report for the year 1919, the secretary noted that "we have done nothing in the way of self-improvement or post graduate work this year." Whereupon, having made the observation, he was authorized to make such arrangements for post graduate study as might seem best for our society in the pursuit of post graduate work. The course was to begin with special lectures on the army standardization of chest examinations, but after one lecture the illness of our instructor terminated the course.

In his report for the year 1920, the secretary called the society's attention to the fact that there were nineteen wide-awake, well informed medical officers of the Public Health Service stationed at Whipple, and it might be that some post graduate work could be done jointly with them, to our mutual advantage. Again the secretary was "instructed" to make whatever arrangements he could with the officers at Whipple for post graduate work. The record further shows that Dr. Southworth, acting president, appointed Drs. Flinn and Yount to represent this society in conference with a like committee from Whipple, consisting of Drs. Allee and Fahy. This committee met and recommended that we take up the Cabot Case Records, presenting three new cases at each meeting, with two doctors from Whipple and one from our Society as "essayists," and two selected to open the discussion on each of these "cases." On Tuesday evening, Feb. 15, 1921, we held our first joint meeting at Whipple, using the Cabot Case Records described above.

In November (1921) the writer took occasion to express to the Publishing Department of the Massachusetts General Hospital, our appreciation of their case records, in these words: "Our society, affiliating with the medical officers at Whipple, have gotten more real good and definite benefit

and stimulus to better work through the systematic study of the Cabot Clinics than by any other method which we have ever pursued." In reply Miss F. M. Painter, assistant editor, said, "Thank you for letting us know the practical value of the Records to your Society. It is always a pleasure to know that their possibilities for usefulness are being developed with appreciation."

In 1922 Dr. Loewy replaced Dr. Fahy on the program committee, and in November we started out with the three group competitive idea—"meetings will be held every second Tuesday as heretofore, alternating between Whipple and the Yavapai Club. Two groups will present cases from the 1921 Cabot Clinics. The odd group will give a half hour review of current medical literature as per assignment. They will also be the judges and vote by ballot to determine which was the better of the two groups presenting cases. They will take into consideration attendance, presentation of subject and general excellence of discussion, in casting their ballots. Also remember that no group may be marked less than 75 per cent as it is self-evident that the work always done in preparation merits at least that rating."

In 1921 the members of the Yavapai County Medical Society residing in Prescott, in conjunction with the Medical Officers on duty in the U. S. V. B. Hospital, determined to institute a course of post graduate study.

After discussing various plans, it was decided to use the case records of the Massachusetts General Hospital, edited by Richard C. Cabot, M. D., and F. M. Painter, A. B., Assistant Editor, which are published weekly in the Boston Medical and Surgical Journal. The data generally noted in these records consists of the sex of the patient, age, occupation, family history, past history, history of present illness, report of physical examination, record of laboratory and x-ray findings, treatment, and, in case of death, the autopsy findings. Time has proven that our selection of the Cabot case histories was a wise choice. There is no other system of case records published which can be so readily adjusted to the plan of study which we have developed.

All the members of the Yavapai County Medical Society nominally participate in the course of study, but, when it is considered that our membership of twenty is scattered over an area of 7800 square miles of mountainous country, it can be easily understood that, as a matter of fact, the actual membership of the post graduate club consists

of the Prescott physicians and the Medical Officers of the Veterans' Bureau Hospital at Whipple, a suburb of Prescott—a group of approximately twenty-four doctors.

During the past six years many schemes for presenting the Cabot cases have been tried out in an effort to improve our method and make our study more interesting. The changes which have resulted in an improved plan have been retained, the others dropped, and, while we may not have attained standardization, we trust that we are rapidly approaching it. Certainly, each year has shown increased interest and more intensive study on the part of the participants. The method used during the past year is the fruit of mature experience and the end result of six years of evolution.

At the beginning of the year all the doctors in the Yavapai County Medical Society and at Whipple are divided into three "groups," balanced as equally as possible as to the professional attainments, specialties and ability to "talk on their feet." Each group elects a leader or team captain. Sessions are held every two weeks, alternating between Prescott and Whipple. The course, which is planned for twelve meetings, begins early in October and is concluded in April. The first, fifth and ninth meetings are "open" meetings. The programs for these are arranged by the group captains and conform to the usual type of medical society meeting, i. e., presentation of papers, case reports, clinical cases, stereopticon, x-ray, autopsy and other pathological exhibits. At the remaining nine meetings, two of the three groups, in rotation, meet each other in competition in the presentation of Cabot case histories, until each group has discussed six cases. The two competing groups are each given a case history as nearly equal in difficulty of solution as is possible to select, and they are graded on the skill with which the case is presented, the accuracy of their diagnosis, as compared with Dr. Cabot's and the autopsy findings. The judges, three in number, are chosen at the beginning of the course and serve for one year.

The grades given by the judges at each meeting are placed in a sealed envelope, which is then given into the custody of the secretary, who retains them until the end of the year, when they are all delivered to the judges, who determine the winning group. In addition to the grading of the judges, an allowance of twenty points out of a possible one hundred is given a group for a perfect attendance record each night. This rating is also taken into consideration in determining the winner. The judges are

also custodians of the Boston Medical Journal, as it is received through the mail, and are charged with the duty of selecting the cases for discussion, having them mimeographed and distributed to members two weeks in advance of the meeting.

At competitive meetings each group is allowed thirty minutes, neither more nor less, for the discussion of the case assigned them by the judges. The captain of each group decides as to how the case will be presented by his group and how many and who shall speak for his group. The only restriction placed upon him is that his group may not exceed thirty minutes and he must call upon his various group members an equal number of times in the year. After a group has concluded its discussion, one of the judges reads the discussion of Dr. Cabot and the report of the autopsy findings, after which the judges retire and prepare their rating of the group.

Immediately after the close of the course of study an annual banquet is held at which, it is needless to add, the attendance is 100 per cent. After dinner, each group captain is requested to tell how and why his group won. Then the Chairman of the board of judges announces the winning group. The two losing groups pay for the dinner. The winning group is, therefore, the guest of the two good losers. This year the winning group won by 11/100 of one per cent and the lowest group was within one and one-half per cent of the winner.

RESULTS

(1) This year we had an average of twenty-one doctors at each meeting, or a general average of 99.5 per cent attendance for the three groups for the series of winter meetings. We mention, with considerable pride, this remarkable percentage for attendance and present it as evidence that we have developed an interesting plan for post graduate work.

(2) Men who, at the beginning of the course, could not get up on their feet and talk because of "stage fright," are now consuming the full time allotted to them, discussing their cases with zeal and enthusiasm.

(3) The division of the doctors into well balanced groups and placing these groups in competition with each other is believed to be an important feature of the scheme for study which we have developed, because it promotes fellowship and good feeling, a wonderful degree of cooperation, and stimulates each individual in the group to engage in intensive study, in order that he may carry his share of the group burden.

(4) Last, but most important of all, it has taught us to carefully evaluate and draw logical deductions from the data available, and we are confident that this training has made better doctors of all of us.

CONCLUSION

"It means much to have been with the masters. Not all of us, unfortunately, can trail with the great, or find opportunities for training under the celebrated of the earth." (Royster). However, for nine evenings each winter since 1921, we have, figuratively speaking, transported Dr. Richard C. Cabot and his colleagues from the Massachusetts General Hospital, Boston, to Prescott, Arizona, at no greater COST than a subscription to the Published Cabot Clinics, or the Boston Medical and Surgical Journal, plus the EFFORT necessary to operate the plan just described. The effort would have been abortive years ago, were it not for the fact that we have at Whipple and in our County Society, doctors with a genuine thirst for medical knowledge, a determination "to know what others have known," and what others know, coupled with a will to do and an inherent compatibility, which enables us to work together as a guild.

Gentlemen, we recommend this plan for your earnest consideration, and we predict that, if you adopt it in your respective county societies, you will not be disappointed in the results you will obtain, and that, after experience with it, you will be as enthusiastic about it as we are.

My colleagues will now discuss a case that was selected for them by the Chairman of the judges, who served our Society during the past winter. This will be presented exactly as it is done in our Society. The members presenting this case have blasted out their diagnosis from the data given in the case history, and have not read or been informed as to what Dr. Cabot's diagnosis was, or the autopsy findings.

INTRODUCTION

Dr. R. N. Looney, Prescott, Arizona

The members selected for the discussion of this case are Drs. W. E. McWhirt, E. W. Loewy, and John W. Flinn.

Dr. McWhirt will make the presentation of the case, as it has been handed to us. Dr. Loewy will discuss the history and the general symptoms, while Dr. Flinn will discuss the diagnosis and symptoms bearing on the final diagnosis. After this the sealed discussion of Dr. Cabot and autopsy report will be broken open and read.

PRESENTATION OF CASE HISTORY

Dr. W. E. McWhirt, Whipple, Ariz.

A Russian Jewish furniture finisher forty-one

years old entered August 5 complaining of breathlessness on exertion for the past month.

Seven weeks before admission he found he tired easily. At the end of his day's work he felt like sleeping, whereas formerly he had been quite active. His appetite had been very poor. He had frequent belching of gas, occasional nausea, and once vomited. He occasionally had dull epigastric pain. The symptoms increased until four weeks before admission he had to give up his work and for several weeks had been resting on a farm. He became very weak and had dyspnea and palpitation on exertion. The dyspnea increased progressively. For four weeks his skin had been very yellow. During the past week he had felt dizzy even while lying in bed, and had had not headache but a feeling that his head was heavy and large. For a week he had urinated once at night. His best weight was 150 pounds; his weight in the Out-Patient Department August 3, 148 pounds.

Records of the Out-Patient Department show a visit ten years before he entered the wards. His chief complaint then was "pains all over." Examination was negative. The blood was not examined. Two days before admission he again went to the Out-Patient Department complaining of "dizzy and fainting spells."

The family history is unimportant.

For the past ten years he had had marked shooting pains over his body. Eight years before admission he had a touch of influenza. For six years he had had attacks of rheumatism in the feet, knees, back and hands. For six years he had had pyorrhea. His teeth were carious. Occasionally while working inside he had nose-bleed. He used shellac, varnish, paints and benzol in his work. He formerly had periods of dizziness. He had occasional chest pain, not severe.

Examination showed a well nourished man with a lemon yellow pallor. Mucous membranes extremely pale. Teeth decayed, many missing. Marked pyorrhea. Lungs clear. The apex impulse of the heart was in the fifth space, coinciding with the left border of dullness, 10 centimeters from midsternum, 1 centimeter outside the midclavicular line. No other enlargement to percussion. Action regular. Sounds of poor quality. Pulmonic second sound accentuated. A harsh systolic murmur along the left sternal border. Pulses and arteries normal. Blood pressure 110/60 to 140/55. Abdomen rather full. Shifting dullness in flanks. No fluid wave. Slight tenderness in the right upper quadrant below the costal margin. Rectal examination negative. Reflexes active. Extremities hypersensitive to vibration. Fundi showed several small patches of hemorrhage. Discs somewhat indistinct. Some small white patches near the hemorrhages.—scars.

Amount of urine 33 to 80 ounces, alkaline at one of twelve examinations. neutral at one. specific gravity 1.005 to 1.022. the slightest possible trace of albumin twice, sediment showed occasional white blood corpuscles in five specimens, occasional reds in four. Renal function 50 per cent. (Two tests.) Blood examination at entrance showed 2,900 leucocytes, 21 per cent. polynuclears, 26 per cent. lymphocytes, 1 per cent. eosinophiles, 6 per cent. large mononuclears, 2 per cent. basophiles, 8 per cent. unclassified; 36 per cent. myelocyte series; hemoglobin 50 per cent., reds 1,376,000. anisocytosis, poikilocytosis, macrocytosis, stippling, polychromatophilia. platelets diminished, reticulated cells 2 per cent. Later counts are indicated in the chart. Wassermann negative. Non-protein nitrogen 33 milligrams. Icterus index 5-8. (Slight hemolysis.) Bleeding time 12 to 14 minutes. Clotting time 10-14 minutes. Clot retraction definite but poor after twenty-four hours with three-quarters

volume of white clot uppermost. Consistency firm and rubbery. Gastric analysis: fasting contents, 31 cubic centimeters, turbid, colorless, acid, mucoid; free hydrochloric acid 13, total acid 28, guaiac negative. Test meal 33 cubic centimeters, white, sweet, thick bread suspension, free hydrochloric acid 05, total acid 50, guaiac negative. Blood culture August 13 showed streptococcus and staphylococcus.

X-ray August 9. The outline of the left kidney was indistinctly seen. It seemed rather large. The right kidney was not made out. No abnormal shadows were present. Barium enema: colon appeared normal in contour. No filling defects seen to suggest organic disease. The palpable tumor mass appeared extrinsic to the transverse colon. (The clinicians found no mass.) There was nothing unusual in the appearance of the lungs or the long bones. The heart shadow was rather wide across the base in the region of the auricles. In the left lower molar region were two rounded areas of diminished density suggesting bone destruction, perhaps secondary to recent extraction, but the most anterior area was rather large and suggested partial bone destruction. September 3 there had been no marked change in the appearance of the left portion of the mandible since the previous observation. The area of diminished density was still present. September 8 the findings were the same. There was no positive evidence of osteomyelitis.

The temperature was normal at entrance, then 99° to 105° until operation. Before operation the pulse was 80 to 120, the respiration 18 to 36.

Consultations: **Oculist:** Hemorrhagic retinitis, both eyes. Numerous retinal hemorrhages confined to arteries at the terminals. Hemorrhages are accompanied by small grayish-white spots. Optic discs are slightly paler than normal and appear slightly blurred. Several red patches with white centers are present. **Dentist:** Lower left molar extracted. X-ray shows no pathology in bone. Will check up in a week with repeats to determine any advancement in possible beginning of necrosis. **Eye and Ear X-ray:** Sinuses negative. **First surgeon:** Infection of tooth socket, probably osteomyelitic, present. No treatment indicated other than oral lavage. **Second surgeon:** Advise operation.

There was much difference of medical opinion as to the diagnosis. August 14 the temperature rose to 105°, the respiration to 35. There was expiratory grunt and at the right base dullness, loud voice and breathing and moist rales. It was thought this might be a terminal event; but the following day the temperature fell to 101° and the rales disappeared. The abdomen was distended. August 16 there was definite gangrene of the cheek. That day 700 cubic centimeters of blood was transfused. Two days later the jaw looked better and the patient felt better.

It was believed that operation offered the only hope. August 20 it was done, followed by transfusion of 600 cubic centimeters of blood. Two days later there was apparently some pneumonia involving the left lower lobe. The leucocyte count was 20,000. The temperature was 102°, the pulse 130, the respiration 53. He improved considerably and by the 26th the temperature was nearly normal, he looked much less anemic and felt stronger and the lung condition was almost cleared up. He continued in about the same condition, with some temperature. September 1 there was some infection and hemorrhage in the region of the left lower posterior molar. Two days later he felt and looked better. Blood examination, however, showed little improvement. A smear showed the red cells in general well filled, though some showed achromia; moderate poikilocytosis, few macrocytes or true tiny microcytes, occasional polychromasia, an in-

frequent normoblast, no megaloblasts or megakaryocytes. Platelets seemed essentially normal, but were found only one to 75 red cells. There were many white cells of which the majority were leukoblasts,—i.e., very immature, abortive and sport cells. A "crude classification" was made,—18 per cent. polymorphonuclears, 36 per cent myelocytes, 22 per cent. premyelocytes, 5 per cent. myeloblasts.

From this point the patient went downhill with increasing rapidity. On the 19th he was delirious. The leucocyte count was 1600. September 20 he became comatose. That afternoon he died.

GENERAL DISCUSSION

Dr. E. W. Loewy, Whipple, Ariz.

The history and findings in the case we have for discussion, have just been given you by my predecessor. The signs and symptoms involve every region of the body and hint at many possible diagnoses, but the one outstanding feature in the report is the blood examinations, which show a very definite anemia of high degree.

The problem which should first engage our attention is, whether or not sufficient signs and symptoms are present to justify us in diagnosing some condition or disease to which the anemia is secondary.

The mention of the large left kidney in the x-ray report makes us think of those organs as the possible offenders, but the normal non-protein nitrogen test and the absence of high blood pressure, enlarged heart, loss of weight, influence us to rule out kidney disease of sufficient advancement to cause such a grave anemia, even with a trace of albumin and a 50 per cent renal functional test. It seems probable that such changes as are present in the kidneys can be considered secondary and not primary to the anemia.

The absence of blood in the urine, lack of cachexia and of metastases would rule out malignant disease, especially hypernephroma.

The pronounced yellow color of the skin, together with prolonged but indefinite symptoms of indigestion, leads us to inquire into the liver as a possible primary offender. The absence of any marked tenderness or any enlargement, and the low icterus index, force us to conclude that the discolored skin is merely part of the picture of anemia.

A history of increasing weakness and dyspnea always suggests a heart lesion. Could there be an endocarditis or any other cardiac condition present that is the basis for this man's condition? There is a slight enlargement and a systolic murmur present that is not transmitted. It is much more probable, judging from the meager information given, that the heart signs are caused by the anemia, as no proof exists of an organic lesion.

The palpable tumor was found in the abdomen by the roentgenologist, but not found by clinician, and the shifting dullness in the flanks, which, of course, means fluid, would lead us to investigate the gastro-intestinal tract for malignancy. The absence of loss of weight would be almost sufficient to rule out malignancy, even if we did not have a negative x-ray and chemical analysis of the stomach contents to assist us. With both taken into consideration, the diagnosis of malignancy in the gastro-intestinal tract is untenable, in fact there is no definite evidence of the existence of malignancy anywhere. The x-ray shows the lungs, mediastinum, long bones, negative. This causes us to rule out at this point a form of secondary aplastic anemia, known as myelophthisic anemia, caused by metastases of malignant growths into the red bone marrow, which metastases so interfere with blood production of the red bone marrow as to present a blood picture somewhat similar to that shown in this case.

One of the most frequent causes of anemia is sepsis, of which we have a suspicious history in this case. For six years he has had pyorrhea and attacks of rheumatism, which shows a condition of chronic infection. He evidently had an abscessed tooth, which the dentist extracted, which extraction was followed by gangrene of the cheek. They also discovered a probable osteomyelitis of the lower jaw, the diagnosis of which rested largely on x-ray reports of rarefaction. An operation was done, probably to drain the osteomyelitis. About this time, or shortly before, a blood culture showed positive for streptococci and staphylococci, which certainly established a diagnosis of septicemia. A final diagnosis of septicemia with osteomyelitis of the lower jaw as the focus, and a profound secondary anemia, would most beautifully explain the evolution of this case, were it not for the fact that we must take into consideration the history, which shows that the profound anemia existed at least seven weeks before we have any hint of septicemia being present. Furthermore, he lived exactly one month after his operation and his progress notes seem to show that septicemia was not a factor in his death.

We seem to have exhausted the most common causes of anemia, especially those covered by the history of the case, and are no nearer a diagnosis than when we started, but, tucked away in an inconspicuous statement in the history, is the following: "He was a furniture polisher and used benzol in his work."

He was in daily contact with this chemi-

cal, which we believe to be significant and presenting a key that unlocks the mystery. Chronic benzol poisoning takes the form of an aplastic anemia. Benzol is a powerful leukotoxin, destroying the white blood cells in the circulating blood and the parenchyme of the blood-forming organs. Marrow tissue is damaged more than the lymph glands, with a consequent greater destruction of the granular leukocytes than the lymphocytes. The erythroblastic tissue of the bone marrow is destroyed, although the red cells circulating in the blood are damaged relatively less. Exposure may be for as short a time as one week. Twenty parts of benzol to 10,000 of air may be poisonous. Eighty per cent of the benzol is absorbed when exposed. There is no specific treatment; even after withdrawal from the toxic influence, the pernicious effect may continue.

We believe that this man suffered from chronic benzol poisoning that produced an aplastic anemia, and that all his complications were due to this anemia.

With this for a tentative diagnosis, let us see how nearly it explains the facts given us.

He gives a history of dizziness and dyspnea, feels tired and weak, palpitation on exertion and, on account of the weakness and dizziness, is compelled to give up work and rest on a farm. This can be accounted for by his severe anemia, as also the lemon yellow pallor of the skin, hemorrhagic retinitis, nose bleed, retardation of blood clotting and the blood pictures presented.

As we have previously ruled out all secondary anemias except that of benzol poisoning, it remains for us to rule out progressive pernicious anemia. A primary anemia in which no cause can be found, with a more or less characteristic blood picture. In pernicious anemia we have a disease with a profound blood destruction as a background. It vents itself particularly upon a destruction of the red blood cells, an hemolysis very severe in character, with the blood producing tissues untouched. The liver and spleen are enlarged, the color index of the cells is high. There is an heroic attempt upon the part of the blood-producing elements in the bone marrow to turn out red cells to replace those destroyed, hence we have set free in the circulating blood, great numbers of abnormal red cells that are immature in character, many nucleated reds being found. But the blood destruction is more rapid than the production, hence the gradually decreasing red count, till a fatal issue occurs.

In this case the blood picture shows a

marked leukopenia and no new blood production. The red cells are low in number, but there does not appear to be any marked attempt of the hemipoitic areas in the red bone marrow to throw out the immature cells. No blasts are present, excepting a few just prior to death. The liver is not enlarged, nor is the spleen, to any marked degree. There is also a depressed condition of the production of the granular type leukocytes. The count is 2900, 1900, 1600, with a conspicuous lowering of the granular cells and a relative increase of the lymphocytes.

When we consider that, in chronic benzol poisoning, we have a destruction of the blood-producing tissue in the red bone marrow, which causes a deficiency in the production of the red blood cells and the granular leukocytes, we can readily see why the lymphocytes, produced from lymphatic glands, would not suffer materially in this disease. We can also see why pernicious anemia is not considered, as there is no production of young red cells.

Let us approach the septicemia and lung condition in view of our diagnosis. Nothing further is noted in the history concerning the septicemia, as the infection did not run a characteristic course. There were no chills, or septic temperature, with the probable exception of the times his lungs showed evidence of involvement. He survived both lung conditions and his temperature reached nearly normal on August 26th, and he did not die till September 20th.

We have two lung conditions to consider in connection with the jaw infection and operation, one before and one after operation. The first condition came on suddenly, with expiratory grunt, increased temperature, pulse and respiration, dullness, increased voice and moist rales at the right base; this was considered a terminal event, but, to their great surprise, the next day the patient improved and all lung signs disappeared. This could hardly be called a pneumonia, but was probably due to an embolus. There is no blood count recorded. The second lung condition, somewhat similar to the first, but named in the history as a pneumonia, occurred after the operation, with a blood count of 20,000, but no differential count. If it had been made it would probably have shown a lymphocytosis, as our final diagnosis would indicate. If a pneumonia, it was probably an aspiration affair, following the operation on the jaw. Perhaps it was another embolic process, as benzol is a fat solvent and causes fat emboli. In either event the patient survived it also, to die later of his anemia.

Our diagnosis is: Chronic benzol poisoning; secondary aplastic anemia; septicemia.

My colleague, Dr. Flinn, will now discuss, in more complete detail, the blood picture and blood conditions bearing on the diagnosis of this case.

DISCUSSION OF DIAGNOSIS

Dr. John W. Flinn, Prescott, Ariz.

Two questions naturally present themselves regarding the blood condition in this case. The first is, on what part of the blood picture does one base the diagnosis of aplastic anemia. The second question is, what is the underlying pathological condition which gives rise to the symptom-complex known as aplastic anemia.

Although the word anemia literally signifies lack of blood, its generally accepted meaning is restricted to a reduction in the amount of hemoglobin in the blood. Since hemoglobin is found in the red blood corpuscles, its amount depends on the number and content of these corpuscles. In health the number of red blood corpuscles is kept at a fairly definite equilibrium by a nicely adjusted relationship between red blood cell formation and red blood cell destruction.

In certain diseases, however, this equilibrium becomes disturbed and an anemia is produced, either by a deficiency in red blood cell formation or by an excess of red blood cell destruction.

The red blood cells, you will remember, are formed exclusively in the bone marrow. They are destroyed in the blood stream, in the spleen and in the liver. Any deficiency in the blood forming cells of the bone marrow will produce an anemia. Any excess of blood destruction in the blood stream, in the spleen or in the liver will cause an anemia.

Thus you will see that anemias, from the standpoint of their origin, naturally divide themselves into two great classes: first, those due to deficient blood formation; and second, those caused by increased blood destruction. Aplastic anemia is the archetype of the first class; pernicious anemia is the outstanding example of the second class. In other words, in aplastic anemia the underlying pathology is a degeneration of the blood-forming cells of the bone marrow. In pernicious anemia the symptomatology is produced by hemolysis—by an increased destruction of the red blood cells.

You will remember that, histologically, bone marrow contains, in addition to the marrow plasma cells, three other distinct types of cells: first, erythroblasts; second, myeloblasts; and third, giant cells, or megakaryocytes. The erythroblasts develop into normoblasts, which finally lose their nuclei

and enter the blood stream as erythrocytes, or red blood cells. Myeloblasts produce myelocytes, and these in turn become the granular leukocytes of the blood-stream—the polynuclear neutrophils, the eosinophiles and the basophiles. The giant cells or megakaryocytes produce the blood platelets. The lymphocytes, you will remember, are not formed in the bone marrow but are produced in the lymphatic tissue of the spleen, the intestines, the tonsils, etc., and in the lymph nodes.

The question which now naturally arises is, what changes in the blood picture do we expect to find in each of these two classes of anemia. In both classes we naturally expect a considerable reduction in the number of red blood cells. In the pernicious type, however, this reduction is caused by an increased destruction of these cells. What is the effect of this excessive hemolysis? The effect is a demand on the quite healthy bone marrow for increased production of red blood cells. In response to this demand, the bone marrow becomes stimulated and hyperplastic. In its efforts to speed up production, immature cells are thrown into the blood-stream, and the blood picture shows blasts of various kinds,—erythroblasts, normoblasts and myeloblasts. These are the two outstanding characteristics of the pernicious type of anemia: first, evidences of hemolysis; and, second, signs of hyperplasia of the blood-forming area of the bone marrow, evidenced by immature cells in the blood stream. There is no noticeable change in the white count, that is, either in the number of granular leukocytes or of lymphocytes.

In the aplastic type of anemia, on the other hand, instead of having a hyperplasia of the blood-forming cells of the bone marrow, we have an actual degeneration of those cells. We have, in fact, an atrophy of the blood-forming areas in the bone marrow, and a replacement of these areas by fat and connective tissue. What is the consequence of this atrophy? The consequence is, not only a lessened production of red blood cells and granular leukocytes, but also a total lack of response on the part of the blood-forming areas to the demand for more cells. These areas are degenerated. They are unable to respond to the demands of the blood, no immature cells are found in the blood stream. Moreover, as there has been no blood destruction, no signs of hemolysis appear. There is no noticeable change in the number of lymphocytes.

This, then, constitutes the essential difference between these two great types of anemia. In the aplastic type we have an

atrophy of the blood-forming areas of the bone marrow, causing a marked decrease in the number of the red blood cells and of granular leukocytes. As these atrophic areas cannot respond to the demand for more blood cells, we have no immature forms in the blood stream. As there has been no blood destruction, we have no signs of hemolysis. In the pernicious type of anemia, we have a marked destruction of red blood cells indicated by definite signs of hemolysis. This blood destruction leads to a hyperplasia of the blood-forming areas in the bone marrow and immature cells in the blood stream. There is no great change in the number of granular leukocytes.

Turning now to the blood picture in this case: We find (1) marked reduction in the number of red blood cells and of granular leukocytes, with a practically normal lymphocyte count; (2) anisocytosis, poikilocytosis and stippling, all of which are found in any severe anemia; (3) polychromatophilia, indicating the presence of a small number of immature red cells, and we have reticular red cells pointing to slightly increased marrow activity; (4) a high color index, which, with the lemon-yellow pallor of the skin, indicates hemolysis.

What, then, is the general interpretation of this blood-picture? As is usually the case, the blood-picture is not pathogenic; blood-pictures rarely are. One nearly always must turn to the history and the symptomatology to clinch the diagnosis.

One's first impression of this blood-picture is that it points rather strongly to an aplastic anemia. Closer study, too, confirms this to a considerable degree. We have here a marked lack of red blood cells and of granular leukocytes, with an almost entire absence of immature cells. It is hard to account for this part of the picture by any other condition than a degeneration of the blood-forming areas of the bone marrow. On the other hand, however, we have distinct signs of hemolysis, a few immature blood cells, and some indications of increased marrow activity.

Turning now to the history and symptomatology of this case, do we find anything which will help us in interpreting this rather complicated blood-picture? We think we do. In fact, we are prepared to take the definite position that our diagnosis explains beautifully the blood findings in the case.

What do the history and the physical examination reveal? They show a man who has worked for years in benzol fumes. Benzol is one of the most generally recognized causes of degeneration of the blood-forming

areas of the bone marrow, leading to a very definite secondary aplastic anemia.

But benzol gives rise to only a partial aplasia of the blood-forming areas of the bone marrow. "Small areas of normal or even compensatory hyperplastic marrow may be found." This would account for the few immature blood cells in the circulation and for other very slight signs of increased marrow activity.

This would not, however, account for the hemolysis. But there is another very distinct feature to this case. Signs, symptoms and blood culture prove conclusively a streptococcus septicemia. We believe this quite sufficient to account for the blood destruction.

Our diagnosis is chronic benzol poisoning; secondary, aplastic anemia; general septicemia, probably secondary to tooth-socket infection.

DISCUSSION

By RICHARD C. CABOT, M. D.

This is a set of general symptoms which with the extreme pallor and the low red count that I see below makes one think that most of his symptoms are due to some form of anemia, whether primary or secondary one does not yet see.

You get a large pulse pressure with a great many anemias, both primary and secondary. It does not help you in diagnosis as long as there is no reason to suspect an aortic lesion.

I think we can see no reason to suspect his kidneys of anything in particular.

"Blood culture August 13 showed streptococcus and staphylococcus." Rather unexpected. We have not had anything to suggest fever. One does not look for anything like this blood culture. One wonders whether it is going to be confirmed. There was no positive evidence of osteomyelitis, which I think they are thinking of because of the positive blood culture.

I do not remember anything about his spleen, but I take it it was not enlarged.

A House Officer: The spleen was not palpable.

Dr. Cabot: We have no reason to suspect it is enlarged. We do not hear anything more about the mass or enlargement of the lymph glands.

Do you know anything about this abdominal operation, Dr. Jones?

Dr. Chester M. Jones: Yes, sir. It was a splenectomy.

Dr. Cabot: The spleen was not felt?

Dr. Jones: No, sir.

DIFFERENTIAL DIAGNOSIS

Dr. Cabot: Now let us put together the definite data as we have them here. We have a positive blood culture, which apparently was not repeated. It does not look as if they thought much of it. I do not know why. It showed both streptococcus and staphylococcus. We naturally associate that with the process in his jaw. Whether or not it is associated with that process I do not know, but they evidently were worried about that process in his jaw. The rest of the body so far as I see shows nothing to explain the positive blood culture until we get this pneumonic process, although it does not look like the main thing.

A transfusion comes in and does him good. So we have a patient who comes in with anemia, we

know he has no enlargement of the spleen, and we have this sepsis, and we have nothing else. I should think this was the natural place to take up discussion as to the cause of this anemia. In the first place we naturally think of pernicious anemia. He is a middle-aged man who without any definite organic lesions such as cancer or tuberculosis or syphilis or nephritis shows a profound anemia. But he ought not to have pernicious anemia. Many of you remember the discussion just a week ago at the Brigham Hospital, where we were confronted with a very similar situation. I shall say now as I said then that the points against pernicious anemia are the absence of any tongue symptoms, the absence of any numbness of the fingers or toes, the absence of any definite evidence of swinging up and down or any remissions, which are almost never absent with pernicious anemia, and lastly the presence of hydrochloric acid on two occasions in his gastric contents. That is strong evidence. From the blood itself, as far as the red cells are concerned, I do not believe that anyone can say. As far as the white cells are concerned, I would rather not say anything without seeing the blood. The difficulty is that one is at a great disadvantage in looking at blood unless one has stained it oneself. I do not believe it is pernicious anemia from the evidence before us.

What else can it be? Cancer of the stomach is always a good thing to think of on general principles. We get fooled on it so often. Did we have an X-ray of the stomach?

Dr. Jones: There was nothing in the stomach, Dr. Cabot.

Dr. Cabot: Did they get an X-ray?

Dr. Jones: Not of the stomach.

Dr. Cabot: We have this chest plate. It shows nothing in particular in relation to his diagnosis, I take it. I should think then we have no good reason to consider cancer of the stomach any further.

What about sepsis? Can you have sepsis with such a low count? Yes, you certainly can. There are a number of cases on record of puerperal sepsis, and not only cases of puerperal sepsis, with a white count not only low but abnormally low like this. So far as the total white count is concerned I do not see how one can exclude sepsis. The history and the picture in the rest of the case do not seem much like it. It does not seem as if he had enough evidence of sepsis to explain such an extraordinary anemia. There again we should like to know whether or not that blood culture would have been positive again if it had been repeated.

Dr. Jones: The first blood culture showed no growth in one flask and streptococcus and staphylococcus in the other. A second one was taken, but we have no record of that.

A. House Officer: It was negative.

Dr. Cabot: Then I should not pay a great deal of attention to that, since one flask was negative and a second attempt got nothing. One takes sepsis as the main cause of death a little less seriously, if that is ruled out.

You all remember the case of anemia which we studied just a week ago and saw the marrow sections thrown up on the screen and called myeloblastoma. That is not yet, I think, satisfactorily named, but as far as the anemia is concerned it caused a myelophthisic form of anemia, where the marrow is pushed out, atrophied, as a result of overgrowth of something else, something else that seemed to suggest none of the lymphocyte series in that case, but rather something of the myelocyte series, so that in the end it seemed to Dr. Minot and the others who talked it over that if it was called a myeloblastoma it would be better than any of the more popular names like leukanemia or aleu-

kemic leukemia, which are very unfortunate names. I certainly do not see any evidence to say that this case is not the same thing. That was the first case with necropsy that I have had anything to do with. Without more study of the blood I cannot say.

Can this be a splenic anemia? Not under any ordinary definition in which that term is used—with a large spleen, which is apparently not present here.

I do not know what kind of anemia it is. It may perfectly well, as far as I see, be the same kind we saw a week ago at the Brigham Hospital. There is nothing in this description of the blood that makes it clearly different from that, so far as I recollect. The only thing that I feel clear about is that it is not pernicious anemia or the ordinary type of aplastic anemia. It certainly does not correspond with that in a good many respects. That is about as far as I can go.

Another condition which I did not mention and which I cannot exclude is lymphoid leukemia with a terminal low count. I have seen a good many cases with a high white count until a terminal sepsis knocked it down, and this blood so far as I can tell by looking at one specimen for a few seconds is not unlike that. If that were true one would expect to find the bone marrow (on which the whole definite conviction here must rest) replaced by cells of the lymphocyte series.

A Student: Could it have been related to his occupational history?

Dr. Cabot: We do not know much about that. There are a number of substances mentioned, but without more study of the amount of benzol he inhaled or the presence of any of their derivatives in his body we cannot go any further. I am glad you mentioned it. There are some substances mentioned there that have caused intense anemia.

A Student: What are your objections to its being an aplastic anemia?

Dr. Cabot: In the first place there is too much evidence of regeneration. In a true aplastic anemia we do not see evidence of regeneration; but there is such evidence here. Then the vast majority of cases are in young girls, usually under thirty.

A Student: In what classification do these sport cells go?

Dr. Cabot: Just as you like—anywhere you feel like putting them.

A Student: If it is a lymphoid leukemia how can you explain the number of myelocytes?

Dr. Cabot: If I were doing that I should not say that they are myelocytes. That is of course a rash thing to do without more study of the blood.

Will you discuss this case, Dr. Jones?

Dr. Jones: This is one of the most doubtful cases I have seen. It is interesting, because nobody was able to agree upon the actual findings in the blood. It was not pernicious anemia, the white cells being entirely unusual for pernicious anemia. There was free hydrochloric acid, no tongue symptoms, no jaundice, and it did not seem like a pernicious anemia clinically. The presenting feature of the case when it came in was bleeding from the mouth and mouth sores, and the first effort was to try to determine whether it was primary or secondary, based upon submucous hemorrhages with subsequent infection. Those are very frequent in various types of anemia, but principally in the type that Dr. Cabot has mentioned, namely lymphatic leukemia with a rather aplastic bone marrow, a lowering of platelets, subsequent hemorrhages and then infection. It is rather common for us to see these patients come in with mouth infection. We felt that the sepsis was secondary rather than primary. The question as to the actual process going on was never decided. After a lot of discussion we

finally agreed to compromise and came to the conclusion that probably the case was a so-called aleukemic leukemia, a very poor term, because it does not describe what is going on. The characteristic blood cells of which Dr. Cabot has seen a few were not easily classified. They were not typical lymphocytes and were not typical myelocytes. When we showed them to Dr. Wright he said it was absolutely impossible to classify them—simply sport cells, probably of myeloid origin, but he could not tell. As the disease progressed it was evident that there was more or less hypoplasia, with a lymphocytic or myelocytic formula, rather than a polynuclear, and there was a low white count except on certain occasions, when there was very marked increase in the sepsis and continued hemorrhages from the buccal mucous membranes. Here was a case with marked anemia, a low white count, sepsis and quite a definite amount of aplasia. The spleen was not palpable. We did not know what to do with the man. Transfusion helped him only temporarily. It stopped his hemorrhages for a very short time, a question of two or three days; then the hemorrhage would recommence. We had one case the year previous which resembled this case rather closely. The white cells were not quite the same, but there was aplasia. There was not a large spleen. The man had been transfused repeatedly with very little improvement. We finally did a splenectomy, because the man was in very bad condition and was willing to try any kind of treatment that offered a chance of recovery. He developed a very good remission as far as the red cells were concerned and at present is alive—two years and some months after the operation—with a perfectly normal red count.

We also had one case that was operated upon in the hospital some seventeen years ago and which is a little like this case. The diagnosis was in doubt before operation. The patient did have a spleen that was slightly enlarged. A splenectomy was done subsequently. Within a few months after it the patient improved and at the same time developed a leucocytosis and a blood picture absolutely typical of myelogenous leukemia. She is still living, one of the few cases of this disease that have lived as long as she has following a splenectomy.

With that background, in spite of the fact that the spleen was not enlarged, our only chance of effecting any change in this case seemed to be a splenectomy. This was done. After it he did improve for a short time, the reticulated count went up and the red cells showed a definite increase, outside of transfusion. The white cells however remained abnormal throughout. He finally died from slight hemorrhage and more sepsis.

The diagnosis as far as we were concerned was never settled, but we had felt that probably we had been dealing with a case of peculiar anemia due to a so-called aleukemic leukemia.

Dr. Cabot: Is there anyone else here who saw the case during life?

Dr. Raphael Isaacs: There were certain features in this case that pointed to chronic or subacute benzol poisoning.—the decreased number of platelets, the hemorrhages, the gastrointestinal symptoms which are found in all cases characteristic of benzol poisoning, also a reduction in resistance to infection. The antibodies apparently are not active as normal, and patients with subacute and acute benzol poisoning are very prone to sepsis. If this man had benzol poisoning the infected teeth were a starting point for sepsis. The uric acid excretion is not increased. According to some the leucocytes are really in the inside of the body, in the capillaries of the liver and the spleen. So we

probably may not have abnormal leucocyte destruction in the beginning. After a time however in benzol poisoning the bone marrow itself produces abnormal cells and may become aplastic. Under such circumstances, especially in the presence of sepsis, it is possible that the bone marrow would make every effort to produce new cells. We found abnormal cells. We should probably find abnormal cells in different organs from the myelocytic series. The other symptoms are those of anemia and symptoms which may be present in chronic benzol poisoning with sepsis and secondary reaction on the part of the bone marrow.

A Student: Was there evidence that he had close contact with benzol?

Dr. Cabot: It is mentioned, but it does not say how close.

Dr. Jones: We went into his industrial history. He was a furniture polisher and had used benzol from time to time. None of the other men on the same job had any benzol poisoning symptomatically.

Dr. Cabot: It seems to me that that is an essential link in your chain. Benzol is a substance a good many people use and do not have any trouble with. You have to say that he is using more of it or in some way he gets more in his system than another person. It might be a special idiosyncrasy or sensitiveness, but that is rather dangerous ground, I think, to take.

The whole interest here is on what the marrow is going to show. I have gone on record and so has Dr. Jones that it will not show the type of marrow associated with pernicious anemia. Dr. Jones thinks it will show, on the contrary, some aplastic anemia. I do not feel so certain about that. I have not studied the case so much as he has. If it were a benzol poisoning it should show in the marrow chiefly loss and not increase of cells, but I should say that that is not probable. We ought to see increase of cells, on the whole of the myelocyte type, not of the lymphocyte type. If it was on the other hand a lymphoid leukemia, with the white count falling suddenly at the end of life, then the marrow ought to show increase of cells of the lymphoid type. These are the possibilities on the two sides. I think if I had to go without any more evidence than I have I should favor the last of these hypotheses.

CLINICAL DIAGNOSIS (from hospital record)

Leukemia, myeloid.

Stomatitis, ulcerative.

Splenectomy for aplastic anemia.

DR. RICHARD C. CABOT'S DIAGNOSIS

Lymphoid leukemia?

ANATOMICAL DIAGNOSIS

Aplastic anemia.

Atrophy of the bone marrow.

Dr. Mallory: The bone marrow was the only thing in the case that we were allowed to examine. Much to everyone's surprise it was an extremely atrophic bone marrow. In gross it was largely fatty, but with a slightly more gelatinous consistency than perfectly normal fatty marrow. It was not red, as it would be in pernicious anemia, and it was not white, as you would expect it to be in a leukemic process. Very few cells were present in the microscopic sections. Of the ones identifiable there were a considerable number of eosinophils, very few myelocytes, very few normoblasts and practically no megakaryocytes found. A great deal of the fat tissue was replaced with a very fine fibrillary network apparently at least resembling coagulation serum. The whole picture is fairly characteristic of what sometimes is called a serous atrophy of the bone marrow. So far as I know anything about benzol poisoning that is consistent with it, but by no means diagnostic.

Dr. Cabot: Between that and aplastic anemia is the general impression you get from the marrow?

Dr. Mallory: Yes.

Dr. Cabot: It seems to me that for practical purposes the importance of this case and the one last week is that they are not benefited by transfusions, and we cannot hope to do them any good through the feeding of liver.

A House Officer: This man was fed liver.

Dr. Cabot: I will read the pathological report on the spleen, which is the only other fact we have on his morbid anatomy. "Spleen 11x8x3.5 cm. On section firm, dark red, with normal follicles. Microscopic examination shows the natural structure obscured by a diffuse and dense infiltration by cells most of which seem to be of the nature of myeloblasts and erythroblasts. Some megakaryocytes and many cells containing blood pigment are present.—Myeloid hyperplasia."

Dr. Mallory: Dr. Wright also saw the bone marrow. We were unable to bring the two together at all.

Dr. Cabot: You can take your choice. It seems to me that for practical purposes the diagnosis of cases like this is now between (a) the intense anemia that will be benefited by liver, (b) intense anemias which we have no reason to suppose will be benefited by liver and (c) those benefited by splenectomy. This man had the benefit of both and did not get better.

A Student: Do you think the operation was justified?

Dr. Cabot: Here is a man on whom we know nothing definite, whose diagnosis in spite of a great deal of study cannot be settled, and we are willing to take any chance. Yes, perfectly justified.

Dr. Jones: He did not die from the splenectomy at all. He died from the disease.

A Student: How about the high color index? Is not that unusual?

Dr. Cabot: Yes. This whole case is unusual. Everything about it is unusual. I do not know that any of us will ever see a case just like it. But you can say certainly that it is unusual to have any high color index which is not pernicious anemia. I think it is well to remember that he did not have tongue symptoms, did not have jaundice and did have hydrochloric acid.

A Student: With the bone marrow picture given is it possible that that is lymphatic leukemia?

Dr. Cabot: No. I think that diagnosis is impossible in view of what Dr. Mallory has said.

A Student: Then what conclusion can you come to?

Dr. Cabot: That it can be explained as benzol poisoning or aplastic anemia of unknown cause, so far as the marrow goes. It seems to me that aplastic anemia is the best diagnosis. Is that what you think, Dr. Jones?

Dr. Jones: It is not idiopathic aplastic anemia of the usual type. It is very unusual. It is not the typical picture, with red cells simply small and pretty well shaped and lymphocytes and no abnormal white cells.

A Student: Is not the clinical picture quite typical of benzol poisoning?

Dr. Cabot: I should say an essential part of the clinical picture of that disease is the knowledge of an unusual absorption of benzol. That we have not got.

A Student: Is not the only thing against the poisoning the simple fact that you have not got that evidence? It does not exclude the diagnosis.

Dr. Cabot: No. I think anyone has a perfect right to believe it is that.

A Student: Are there other cases of benzol poisoning showing pictures like this?

Dr. Cabot: Not so far as I know.

Dr. Jones: Dr. Minot was given all the details of the case, and he thought it was not characteristic of benzol poisoning. That was before we had seen the marrow.

ARTIFICIAL PNEUMOTHORAX

F. D. VICKERS, M. D., Medical Director
Holy Cross Sanatorium, Deming, N. M.

Read before the New Mexico Medical Society, at its Forty-fifth Annual Meeting, at Carlsbad, N. M., May 9 to 11, 1927.

This talk is not for the doctor who is expert in giving pneumothorax—and there are many such experts in this part of the country—but for the general practitioner, who does not pay much attention to this method of treatment because he does not do it. Some years previous to the time I began giving pneumothorax, I was convinced of the value of lung compression by fluid in many cases, and especially in the case of a patient with bilateral pulmonary tuberculosis who came to New Mexico from Louisiana. He had been working to support a large family; had developed influenza, from which he was not able to recuperate; he grew gradually worse until he was in a dire condition from much trouble in both lungs—the neighbors were sitting up with him at night and I looked for crepe in the morning. He persisted in living and finally developed fluid in the left side which had the greater amount of trouble. As the fluid developed, he began to get better, to eat, and, to make a long story short, after staying in bed six months, he got out of bed and went back to Louisiana, lived several years and finally died as a result of an accident.

The principle involved in collapse of lung is to give rest to the lung—to squeeze the pus out of the lung and stop the secretions of pus and toxins, and put the lung at rest. If we have a joint with tuberculosis, we stop motion. If we have a lung with tuberculosis, we let it continue to breathe, with many movements per minute for twenty-four hours a day. If we can stop production and absorption of toxins we better the patient's general condition and thus better a not too active condition in the other lung, a laryngitis, or tuberculosis elsewhere. It is found possible to collapse one lung without any bad effect on the heart or on the circulation, and to continue that collapse without harm for an indefinite period.

While the general practitioner does not take a great amount of interest in pneumothorax treatment of tuberculosis, still he is the doctor who treats serous pleurisy, and

the treatment of this type of pleurisy will, in the future, be closely allied with the idea of lung compression, whether by fluid or by pneumothorax. Pleurisy with effusion of doubtful etiology, should be generally accepted as the result of tuberculosis of the lung, quite frequently not well enough developed to be recognized. It seems that particles of dust and bacteria that get into the lung by inhalation or by the blood stream and remain in the lung, settle at the periphery in the sub-divisions of the lungs, which are sub-pleural. When there is an allergic response and the bacteria are held in the pleural region, we can easily see the tendency to get pleurisy, even though the x-ray may not show much apparent parenchymatous infiltration. While the lymphatics of the bronchial arteries and the main venous trunks flow towards the hilum, the lymphatics about the veins just beneath the pleura connect with the pleural network of lymphatics and flow towards the pleura. Leukocytes engulf one or more of the bacilli, retain for a time their mobility and, when arrested in the capillaries, permeate the vessel walls by diapedesis, reach the lymphatic channels and, if not arrested there, are carried on by the current to the lymphatic glands. In history-taking of tubercular patients, it is common to get a history of pleurisy with fluid some years previously. Had the pleurisy been accepted as tuberculosis of the lungs and the patients been treated along this line at the time, many would have been prevented from breaking down later. The fluid was aspirated, and again aspirated, and early absorption sought; the lung was not compressed sufficiently long, and the follow-up treatment did not consider the cause—tuberculosis; hence, the patient was not cured.

The treatment in general practice up to recently was to aspirate to try to get rid of the fluid, and not to consider the cause. Now we aspirate only enough to relieve pressure, if that is necessary, and leave the fluid to compress the lung as a treatment for the tuberculosis of the lung, which is the cause of pleurisy. And then comes the consideration whether it is not advisable to aspirate more or less of the fluid and replace by air, or possibly by oxygen, when it is advisable to compress the lung for a considerable length of time. If the fluid is left, adhesions begin to form at the top of the fluid, the fluid is pocketed and gradually absorbed, leaving adhesions in its wake—fluid does not surround the lung as does air, but the lung surrounds the fluid, forming adhesions and gradually absorbing the fluid. In cases of pneumothorax complicated with

fluid, the fluid should be replaced more or less by air if we are desirous of keeping up the compression. We are coming to the time when, if it is considered advisable to aspirate fluid because the patient is not doing well on account of the absorption of too much toxin, or by reason of too much disturbance from pressure of the fluid, we will draw off more or less of this fluid, replacing it with air to a zero pressure and keeping up this pressure by air as long as we desire for the treatment of the underlying cause of pleurisy. And we will find ourselves considering the possibility of using pneumothorax in the dry pleurisy before fluid has formed and before too many adhesions have formed.

The following brief case summaries are given to illustrate some points in pneumothorax therapy:

Case 1. J. J., a young man; diagnosis of tuberculosis right lung, May, 1926; October, 1926, developed pleurisy with effusion left side; the supposition, of course, is that he had tuberculosis in left side; left fluid on left side in spite of fact that his more marked tuberculosis was in right side. Fluid quite well absorbed by February, 1927; having pleurisy, with pleurisy rubs, right side, March, 1927, and x-ray showed pleurisy with effusion tuberculosis of intestines. Had flare-up of temperature with fluid on right side; pressure so great that it disturbed him somewhat and we drew off little fluid to relieve this pressure. Now we would hesitate in case like this to give pneumothorax, yet we treat both sides by leaving fluid, which is equivalent to pneumothorax, and patient does all right. I believe, if this fluid were partially drawn from right side and replaced by air so that we can keep up compression as much as we like or as little as we like, it would be better than leaving it to chance of having fluid pocketed and absorbed, perhaps before we want it absorbed.

When the commonly accepted method of treatment by rest, fresh air, good food and general management, fails, and the patient is doing badly, then think of pneumothorax.

Pneumothorax has not had a fair trial because it has much too generally been given as a last resort—too late. In cases where the lesions are largely one-sided and are not doing well, pneumothorax should be tried fairly early.

Case 2. S. U., young woman; when she came to sanatorium had some activity with tendency to small hemorrhages occasionally; put to bed for few months, but did not improve; was given pneumothorax; later turned over to my predecessor, who kept up pneumothorax for two years, and who had these x-rays taken. Fig. 1 illustrates very nicely how, in early cases before we get adhesions, it is possible to get perfect compression. Fig. 2 illustrates the necessity of using x-ray to guide us in such cases—with no adhesions and with a flexible mediastinum, how easy it is to push everything over into the other side. These two pictures were taken August, 1923; pneumothorax was kept up for about two years, and Fig. 3 shows the condition in August, 1926, with lung fully expanded.

Case 3. Mrs. H. H. B., age 27; first diagnosis March, 1924; admitted to sanatorium November, 1925; had previous sanatorium care; rales in base of right lung; although an ideal patient, the trouble did not clear up and, January, 1926, began pneumothorax; got out of bed in April, 1926, returned to home in western Texas; up and about, and the last I heard of her, she was riding by stage 250 miles for re-fills.



Fig 1: Case 1, showing the ideal compression obtainable where there are no adhesions.

It is not necessary that a case should have lesions in only one lung. If one lung has lesions that are not too active—as usually the trouble will start in the right lung and this lung, while showing lesions becomes resistant, more or less quiescent, and is not poisoning the patient—the infection goes on to the other lung and runs away.



Fig. 2: Case 1, showing excess pressure displacing mediastinum. These structures readily returned to normal position, as part of the air was absorbed.

Case 4. Mrs. A. S., age 28; first diagnosis fall of 1925; entered sanatorium May, 1926; in bed six weeks; running temperature, losing weight, no prospects of doing any good; pneumothorax given; compressing left lung (Fig. 4); from time of first treatment to present she gained 58 pounds; pulse slowed down, slight temperatures occasionally, still coughs and raises some.

The treatment of advanced tuberculosis

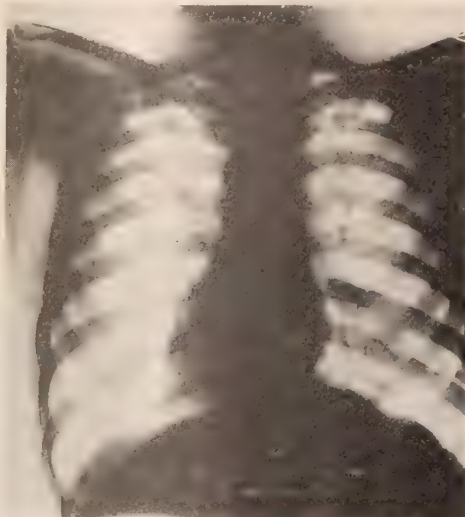


Fig. 3: Case 1, one year after the expansion of the lung.

is not free from danger by any method; we may get hemorrhages and spontaneous pneumothorax in our "watchful-waiting" rest method, and not infrequently hemorrhages cannot be controlled by any method except by pneumothorax.

Case 5. H. D., young man; had been sick a number of years with tuberculosis; up and about all the time; not running much temperature; had repeated hemorrhages and I gave him pneumothorax to control bleeding; he lived three and a



Fig. 4: Case 4, showing left lung under partial compression.

half years, working all the time—he was Justice of the Peace and an insurance agent; died of fibrosis in opposite lung; before death did not run temperature and did not cough nor raise much.

Case 6. L. H., age 31; diagnosis April, 1926; two hemorrhages before coming to sanatorium; arrived sanatorium May 28, 1926; May 29 had hemorrhage of pint, and started pneumothorax; gave him 1,000 c.c.'s first day in divided doses; June 4, 500 c.c.'s; June 5, hemorrhage of one-half pint; June 6, 500 c.c.'s, same day hemorrhage of one-half pint; June 7, 500 c.c.'s, hemorrhage same day of more than pint; June 9, hemorrhage 23 oz., gave him 400 c.c.'s, after which he had no more hemorrhage. He bled 23 oz., after having 2,900 c.c.'s of air; he bled, altogether, 7 pints. Continued pneumothorax until he returned to his home in Indiana, August, 1926, saying he would rather live one year there than ten years in New Mexico.



Fig 5: Case 8, showing extensive fibro-cavernous involvement of the left lung.

Spontaneous pneumothorax is much more common than is generally supposed.

Case 7. W. M., age 33, ex-service man; first diagnosis, 1918; chronic case; refused further hospitalization; had pneumothorax treatment left side some years previous to time I first saw him; a week or so before entering sanatorium, he had abscess of lung empty out; came to sanatorium on account of very severe dyspnea. I found spontaneous pneumothorax on left side, which was side on which he had his previous pneumothorax treatments; in few days he developed acute trouble on opposite side and died.

Considering the dangers of pneumothorax, spontaneous pneumothorax may complicate our pneumothorax cases.

Case 8. P. M. O., middle aged man; ten years ago came to this country for tuberculosis; supposed to have been arrested; entered sanatorium when he came to the place where he could go no further; was running temperature 103 to 104, coughed, raised three boxes of sputum every day; rapid pulse. As may be seen from x-ray (Fig. 5) there was no chance of recovery by ordinary treatment; I told him his only chance was in having lung collapsed; found pleural space and gave 300 c.c.'s which was not followed by any reaction or pain; some twelve hours later he was taken with very severe dyspnea

caused by spontaneous pneumothorax. The x-ray showed fluid and the aspirated fluid contained streptococci and tubercle bacilli; an abscess formed in the needle puncture; at the second aspiration in a few days, the pus was too thick to aspirate; put in tube and x-ray (Fig. 6) shows the lung partially recovered from compression, opening up cavities in upper part of lung from which he is raising two boxes of sputum a day, running temperature 102, with no prospects of getting better. There was a time when this lung could have been collapsed safely.

We naturally think of infection from without, but with skin-puncture with knife so as not to carry infection from the skin, with filtered air that has stood over antiseptic fluid, and with aseptic care, I do

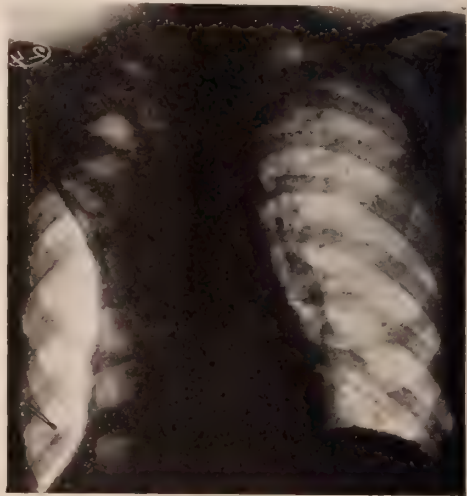


Fig. 6: Case 8, showing lung partly expanded, after having once been collapsed, over the upper portion. Tube has been inserted for empyema drainage after infection following spontaneous pneumothorax. Patient died in June, 1927.

not consider infection from without. But there is some danger of infection from within, as adhesions pulling open infected places in the lung may cause infection of the pleural space with tubercular or mixed infection.

Complication of fluid happens very often and, should a large amount of fluid form, I believe it should be aspirated and replaced by air; if the fluid is turbulent, aspirate and replace by air.

In regard to pleural shock: I use novocain and adrenalin, with a small needle, blocked down to, and including, the pleura, and while I have had no experience with pleural shock, I would not say there is no such thing. Pain is frequent after the first treatment, as the separation of slightly adhering pleural surfaces may cause severe pain, for which it may be necessary to give a narcotic.

Some years ago a man about thirty-five years of age, with chronic tuberculosis of

both lungs, came to the local hospital with influenza. While there, he had a bad hemorrhage and I gave him pneumothorax to control the bleeding. He improved and left the hospital, and was continuing the pneumothorax treatments while up and about. He had some leak of air and, while I gave him the treatment a good many times, on one particular occasion upon introducing the needle and turning on the manometer I got oscillation but did not study it carefully enough, and I was not checking him up with x-ray—as I had done it many times before I did not pay much attention and turned on the air. He almost immediately began to complain and I turned the manometer off. He developed paralysis up one side of his body and a spasmodic condition of the opposite side; lost consciousness for a few minutes, but soon began to improve. Next day he was all right except for a slight weakness on the side that had been paralyzed. This is the only experience I ever had with air embolism and I am giving you a little description of it because very few have seen air embolism cases. I am sure it was caused by introducing the needle into the lung; we can also conceive that it would be possible to open a blood vessel in the lung by adhesions pulling loose from the lung under air pressure.

Some cases leak air—the air under pressure from coughing being forced through the valve opening in the lung, which does not allow the air to escape back into the pleural cavity.

ILLUSTRATIONS 25, 26 and 27; M. B., young woman; had tuberculosis for some time; had been better and worse; had stopped work and came to sanatorium to rest up for time. X-ray shows cavity in upper part of right lung; she did no good under sanatorium treatment for some months; left account financial condition; in town walking about and boarding herself, running temperature 102-103, coughing and raising. Gave her pneumothorax January, 1927; from January to March she had 3,000 c. c.'s; physical examination, March, would lead one to believe she did not have much air in pleural cavity; manometer gave very slight oscillation upon introduction of needle; x-ray shows no air in pleural cavity except at top of lung; cough has ceased and she raises practically no sputum; no fever; the cavity shows compression; introduced needle under clavicle, got oscillation of manometer; gave her 400 c. c.'s; in three weeks, needle introduced same place, got very slight oscillation and she took only a small amount of air.

Pneumothorax does not rank very high because it is used in too many cases that are incurable.

ILLUSTRATIONS 28 and 29; W. B., age 21; in our extreme desire to do some good for one who isn't doing well, we gave this boy pneumothorax; he was running temperature, had rapid pulse, and there was no prospect of his doing any better under the "watchful-waiting" treatment; he developed

appendicitis following the pneumothorax; was operated on under local anesthesia; found patch on colon suspicious of tuberculosis; recovered from operation perfectly, having no signs of abdominal tuberculosis; now he is running scarcely any temperature, pulse not rapid, coughing and raising some. While we cannot promise that he will make a cure, he does show considerable improvement.

DISCUSSION

DR. CARL MULKY, Albuquerque, (opening): I haven't much to add to Dr. Vickers's paper, as he has covered the ground very thoroughly.

Pneumothorax treatment has been well established since 1910 in this country and it has spread until now it is a standard form of treatment in certain classes of cases. At first pneumothorax was usually tried on advanced, hopeless cases, but gradually, year by year, it is being given earlier and the results are improving. It used to be that it was given as a sort of last resort; when it was felt that something had to be done and there was nothing else to do—then pneumothorax was given. Some good results were obtained, so there has been a gradual increase in its use. The only thing that I would suggest in artificial pneumothorax is that it be given as early as possible. In such cases the results are usually good.

DR. H. H. LATSON, Amarillo, Texas: I have not had much experience with pneumothorax and have no discussion to make of the Doctor's very able paper. I do recall, however, the instance of a morphine addict in our country not long ago, who was working our physicians by taking a medicine dropper and injecting air directly into his veins.

DR. FELIX P. MILLER, (El Paso): I enjoyed Dr. Vickers's paper very much and am sorry that I was not here to hear the first part of it. There is no doubt in my mind as to the value of artificial pneumothorax. It has done a wonderful amount of good for patients in early cases, and has also done a great deal of good in a number of old cases, practically hopeless otherwise.

It is well known that the air negative pressure has a selective influence over the pathological lesion. If you wish positive pressure to the degree Dr. Vickers showed us in one case, undoubtedly you can displace the viscera and cause a great deal of inconvenience to the patient. The same reason Dr. Mulky gave for the use of pneumothorax in the early cases, applies to everything done for the tuberculous individual. The earlier the disease is recognized and the sooner the treatment advocated (and most of us advise abundant rest), the better the chances for recovery. During this period, the patient has every advantage to supplement rest in bed with hygienic measures and food that is being given him in order to raise his resistance to a point where we can speak of him as an arrested case.

Dr. Vickers showed a number of cases well adapted to the use of this treatment and a few which he himself knew were what we speak of as a long chance in endeavoring to do something for the patient, when the case otherwise looked hopeless.

A number of the cases that have come to grief in my experience are those in which there are adhesions near the apex and it requires such a pressure of air to collapse the base and also to make a pressure upon these adhesions that, in the zeal to compress these, pressure is increased to such a point that rupture of the lung tissue is produced. It is in these cases that I have seen the most trouble from the resulting fluid and empyema. In some cases we can inject a small amount of air and get

to the apex above the adhesions and so compress the activity; then there will be less danger.

My work deals largely with cases that have had pneumothorax and the lesion becomes active again and the pleura is adherent; then pneumothorax is forever barred and we must have surgical compression by means of a thoracoplasty.

DR. VICKERS (closing): I have nothing to add except to thank you for the discussion.

USE OF IODIZED OIL IN DIAGNOSIS AND TREATMENT OF BRONCHIAL AFFECTIONS

STUART PRITCHARD, M. D.

Battle Creek, Mich.

Read before the Annual Meeting of the New Mexico Medical Society held at Albuquerque, N. M., May 19-21, 1926.

Iodized oil is used as an opaque medium in the roentgenographic study of body cavities. It was first employed by Sicard and Forestier in 1921 as an aid in locating and demonstrating obstructions of the spinal canal, and later was used successfully by the originators in exploring dilatations, fistulous tracts and cavities of the bronchial tree and the pulmonary tissues.

Since October, 1924, we have employed iodized oil in the form of bronchial injections as a diagnostic and therapeutic agent. This article is based on the results of this study and also the writings of Sicard and Forestier, Sergent and Cottenot, Nigoul-Foussal, Ballon, Archibald and others.

The iodized oil we have employed is the chemical compound of 40 per cent metallic iodine with oil of poppy seeds described and used by Forestier. The oil and iodine are so closely combined that the ordinary starch fails to reveal free iodine.

Iodized oil is of clear amber color, is neutral in reaction, has a specific gravity of 1.350, and is insoluble in water or alcohol. The iodine may be liberated by the alkaline carbonates of the saliva and intestinal secretions, but is not affected by the gastric acidity. It becomes brown when exposed to the action of light, air, humidity and high temperature, because of the liberation of iodine. The high iodine content of the compound renders it opaque to the roentgen rays. The value of the oil as a diagnostic agent is due to its resistance to the roentgen ray and to its tolerance by the bronchial mucous membrane. The therapeutic advantages are due to the slow rate of absorption of the contained iodine without harmful effect on the patient. Iodism does not occur unless the oil is swallowed and subjected to the action of the intestinal secretions. The slow liberation of iodine

prevents the danger of pulmonary congestion, which sometimes follows the use of iodides. It must not be used, however, when brown, on account of the caustic effect of free iodine.

There are four methods of introducing iodized oil into the bronchial tree: namely, the supraglottic, the transglottic, the subglottic and the bronchoscopic. In the first and second procedures, a curved cannula is used. In the subglottic method, a hollow curved needle is passed through the cricothyroid membrane into the trachea, while in the fourth the oil is introduced through the bronchoscope.

The following general principles should be observed in all methods:

1. The use of discolored oil should be avoided.
2. Warm oil should be used, as it flows more freely and lessens the tendency toward cough.
3. Solutions for anesthesia should be warmed.
4. Roentgenographic exposures should be made as soon after injection as possible, and cough should be prevented by any unnecessary movements of the patient.

METHODS OF INTRODUCTION

Supraglottic.—In some patients the injection can be made without local anesthesia, but a better procedure is to swab the pharynx, soft palate (velum) and the base of the tongue with 5 per cent. cocaine solution. After an interval of three minutes, 1 c.c. of warmed 2 per cent. cocaine solution should be dropped into the glottis with the aid of a laryngeal mirror, syringe and curved cannula. Five minutes later the injection can be made. The patient sits facing the operator and slightly inclined toward the side to be injected, and is instructed to pull the tongue forward and breathe normally throughout this stage of the operation. A 20 c. c. syringe filled with warmed iodized oil is firmly attached to a 6 inch cannula having its distal end curved to a right angle or less. With the aid of a laryngeal mirror, the tip of the cannula is introduced behind the base of the tongue held over the glottis, and the oil is slowly expelled from the syringe into the larynx. We have found that it is best to give no instructions to the patient regarding the manner of breathing, except in case of threatened cough, when a deep inspiration is advised.

Transglottic.—This method of injection is made with the tip of the cannula passed through the glottis into the trachea. The

pharynx, velum and base of the tongue are anesthetized as in the supraglottic method, but for the larynx and trachea the quantity of 2 per cent cocaine is increased to 1 to 3 c. c., on account of the deeper degree of anesthesia required.

Subglottic.—In this method, devised by Rosenthal, any difficulty in passing the larynx is avoided, and the oil is injected directly into the trachea. After anesthesia of the skin and subjacent tissue, a hollow curved needle attached to a metal guard is pushed through the cricothyroid membrane and into the lumen of the trachea. The position of the needle should be verified by attaching a syringe and aspirating, the withdrawal of air or mucus showing the needle to be in the trachea. From 1 to 2 c. c. of warmed 1 per cent cocaine solution is then slowly injected through the needle, in order to anesthetize the mucosa of the trachea and bronchi of the desired area. The patient may cough for a short time. After from three to five minutes the iodized oil should be injected by means of a metal syringe firmly connected with the needle by a piece of strong rubber tubing. The tubing allows a certain motility of the syringe and must be strong to withstand the pressure necessary to force the oil through the needle.

POSITION OF PATIENT

The patient's position during injection is important as the distribution of the oil is determined by gravitation and the aspirating power of the lung. If one observes the progress of the oil on a fluoroscopic screen during injection, the greater portion may be seen to follow the most dependent bronchial trunks. For this reason the inferior lobes are most easily injected with the patient sitting. The oil is directed to the right or left bronchus by inclining the patient slightly in a corresponding direction during the injection. The middle and upper lobes can be injected only when the patient is lying, and with this position the supraglottic method is still effective, but the transglottic, the subglottic and the bronchoscopic may be used. To fill the apical bronchi, the patient should be placed on a tilting table with the desired side downward. A few seconds after the injection, the head of the table is lowered for a minute to permit the oil to flow into the upper lobe.

A useful exploration requires from 10 to 20 c.c. of oil, and in the presence of large bronchial dilatations the lung will accept 40 c. c. without evidence of distress. When injecting more than 20 c. c. of oil, the transglottic, subglottic or bronchoscopic method is preferable.

COMMENT ON METHODS

In the application of any method, the patient should be told what is being attempted, and assurance given. In this way cooperation is obtained, time is saved, less anesthesia is used, and better results are accomplished.

The supraglottic method without anesthesia will seldom be successful with patients who are apprehensive or in whom the larynx and trachea are irritable from previous cough of long standing. Even with anesthesia, it is rejected by Forestier¹ as being rarely satisfactory. On the other hand, it is upheld by Claisse and Caussade.² In our experience, the supraglottic method with local anesthesia has been successful in the great majority of cases, and in the absence of unusual laryngeal irritability it is always tried first. The method, however, is more satisfactory in the injection of areas lying at or below the level of the lung roots, as the oil follows the path of least resistance.

Prior to the bronchial injection, the patient should have a physical examination of the chest and a roentgenologic study. When the examination is repeated after the injection, considerable information may be obtained regarding bronchial irregularities, the size, shape and position of the trachea, and a detailed knowledge of the contents of the lung root zone not revealed by any other diagnostic procedure. The roentgen-ray study should include oblique stereoroentgenograms in addition to the ordinary postero-anterior exposures. The trachea and its bifurcation are thereby clearly outlined, and images which otherwise would remain obscured by the cardiac and diaphragmatic densities are definitely exposed.

It is necessary to make the postoperative roentgen-ray study immediately following the injection, with as little disturbance of the patient as possible, for the reason that with the return of the cough reflex the larger bronchi may become partially emptied and valuable information be lost. Hence, in a patient showing unusual irritability of the trachea, it may be necessary to abandon the technic and make both the injection and the exposures on the roentgen-ray table.

The practitioner intending to use iodized oil in the diagnosis of pathologic conditions of the lungs should first practice injections in normal subjects, and so learn to recognize the shadows characteristic of all parts of the uninjured bronchial tree.

In the normal (fig. 1), the trachea and the large bronchi are shown in outline by the oil, which clings to their walls, but the smaller bronchi appear as continuous solid

lines, which diminish in width as they approach the thoracic wall. Surrounding the bronchi, the filled alveoli are represented by a coarse stippling. After the patient has coughed, the hitherto unbroken line of the bronchial shadow becomes interrupted, but the alveolar shadows remain. This broken bronchial line can also be caused by the use of an insufficient quantity of oil. The alveolar shadows remain unchanged for about twenty-four hours and then gradually disappear during the ensuing ten days. Forestier³ says that the urinary elimination of iodine passes its maximum after the third day but persists to the amount of several milligrams daily, as long as there are pulmonary shadows.

PATHOLOGIC PICTURE

The sharply defined outline of the trachea and its bifurcating branches enables one easily to recognize the exact site of conditions such as deviation or compression. It is unwise to dismiss the possibility of an anteroposterior compression of the trachea without the study of films taken in the oblique or lateral position (fig. 1).

Iodized oil, however, finds its greatest usefulness in the visualizing of bronchial dilatations and particularly in those earlier cases wherein cough is the chief or only symptom, and both physical examination and the roentgen ray fail to locate the focus. After injection, these early dilatations are shown as small, pouch-like shadows. Those of longer standing (more advanced) may be cylindric or may resemble a hanging bunch of grapes (fig. 2), drops of tar or even the fingers of a glove, as described by Sergeant and Cottenot.⁴ These abnormal shadows stand out in excellent contrast with the regular and more delicate outlines of the surrounding normal area.

The presence of fragmented bronchial lines in films made before the patient begins to cough may be considered as evidence of the presence of abnormal bronchial secretions, provided one can exclude an insufficient quantity of oil as a cause.

It is evident, then, that any pulmonary cavity can be shown roentgenographically if its bronchial outlet allows the inflow of iodized oil. We have not found occasion for injecting a tuberculous pulmonary cavity, but we have succeeded in locating the cavity of a foreign body abscess which, on the regular film, remained hidden (fig. 3). This fact suggests that this procedure with serial oblique films might be a valuable aid in thoracic surgery. In the exploration of thoracic fistulas, the fluidity of iodized oil renders it superior to bismuth paste. Archi-

bald⁵ has drawn attention to the value of this oil in demonstrating the persistence of tuberculous cavities and bronchial dilatations after thoracoplastic operations.

We find the injection of iodized oil of great value in patients presenting symptoms of persistent cough, occasional fever and expectoration free from acid-fast bacilli. These patients complain of exhaustion and are underweight. Their cases are frequently diagnosed as tuberculosis, and the physical examination, laboratory findings, and roentgenologic study give no definite information as to etiology. The following cases will illustrate the point:

M. C., a man, aged 36, 5 feet 6 inches (168 cm.) tall, weighing 131 pounds (59 Kg.), with an average weight of 140 pounds (64 Kg.), was pale, was nervous, and tired easily. A chronic cough persisted for eight years, following influenza. The expectoration was scanty and revealed no acid-fast bacilli or elastic tissue. At times the cough was increased in severity, and some slight degree of fever was present. The patient complained of a heavy dull pain under the middle of the sternum. He had been told that he had tuberculosis. After a careful physical examination, laboratory test and roentgen-ray study of the chest no abnormalities were found, except rhonchi over the right lung root zone in the back. Iodized oil was injected into the right root and base, and a distinct bronchiectatic dilatation (fig. 2) was shown at the edge of the right lung root density. The patient was given an injection of 10 c. c., once a week for six weeks and, eight months later, he reported that since then he had had no cough or expectoration and felt well. The supraglottic method was used, and no local anesthesia was administered after the first injection.

M. K., a woman, aged 52, had had chronic cough, associated with about 10 to 20 c. c. of purulent but odorless expectoration daily, following an acute bronchitis five years previously. No acid-fast bacilli or elastic tissue was found (pig inoculation). There was no clubbing of the fingers, no loss of weight or history of fever. The patient complained of fatigue and of the annoying cough and expectoration. Physical examination and roentgenologic studies of the chest showed no abnormalities, except that the right root shadows were somewhat prominent. The nose and throat were normal. Twenty c. c. of iodized oil was injected into the right lung root zone by the supraglottic method. A very distinct irregular bronchiectatic dilatation (fig. 4) was revealed in the inner right lung root zone, over which grouped rales were found, the result of the retention of the oil. This area was in all probability the seat of the bronchial affection; lack of drainage caused a persistent multiplication and accumulation of bacteria. Fourteen injections of 12 c. c. of iodized oil were given this patient at intervals of not less than five days, the object in treatment being completely to fill the small bronchial dilatations. Five months after the last injection, the patient reported much less expectoration and only a slight cough.

M. P., a woman, aged 36, had had a cough since she was 18 years of age, following a severe attack of acute bronchitis. For the past twelve years, the cough had been loose, productive and became worse on lying down. The sputum was yellow, offensive and from 30 to 40 c. c. in quantity daily; no acid fast bacilli or elastic tissue was found (pig inoculation). The fingers were definitely clubbed. The

nutrition was good. There were occasional attacks of fever. For the past three years, the condition had been growing worse. Scattered rhonchi were heard on physical examination of the chest. Anterior and oblique stereoroentgenograms showed no abnormal densities. The nose and throat were normal. Fifteen c.c. of oil was injected into the right lung root and descending bronchial tree, with no signs of dilatation. Later, the left root and descending bronchial areas were injected, and a number of cylindric bronchial dilatations were found (fig. 5). Sixteen injections of 10 c.c. each were given over a period of eleven weeks. Four months after treatment, the patient showed a marked improvement. The sputum had greatly decreased in amount and was odorless. A slight cough remained, but the patient reported that she has never felt so well in years.

CONCLUSIONS

1. By the injections of iodized oil into the bronchial tree, small bronchiectatic dilatations in and around the roots of the lungs and cylindric fusiform enlargements of the descending branches may be revealed in many cases of chronic cough, which a previous exhaustive examination of the chest failed to show.

2. The entire bronchial tree cannot be visualized at one injection. Small sections should be injected at intervals until any abnormality is discovered or the entire field is studied.

3. The nose and throat should be studied in all cases. Bronchiectatic cavities occur as the result of chronic upper respiratory infections, and may continue to cause cough after the tonsils are removed or the sinuses drained.

4. In the majority of cases, we feel that the supraglottic method of injecting the lung roots and descending branches of the bronchial tree takes less time, less anesthesia, is less worry to the patient and gives results quite as satisfactory as other methods.

5. It is not necessary to use extensive local anesthesia in the majority of cases.

6. In more than 600 bronchial injections of iodized oil, we have seen no ill effects in our patients. No cases of iodism occurred.

7. The technic is not difficult. It requires no special training.

8. Negative results of an injection are no diagnostic proof that bronchiectatic dilatations do not exist.

9. The therapeutic use of iodine is not new but this compound of iodized oil is a new combination and, as a result of the slow liberation of the iodine in the bronchial tree, acts as an ideal treatment in chronic affections of the lower respiratory tract.

10. In acute affections, we hesitate to in-

ject iodized oil for either diagnostic or therapeutic purposes.

11. Iodized oil should not be injected in cases of advanced suppurative condition.

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TUBERCULOSIS OF THE SKIN

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Read before the Cochise County, Arizona, and the El Paso County Medical Societies.

The subject of tuberculosis of the skin is a large one, and the literature covering it is extensive. Much of this literature, particularly that dealing with the less known types of lesions, is contradictory and confusing to the practitioner who is seeking aid in diagnosing these lesions. It was thought that an outline of the modern conception of tuberculous disease of the skin, and a brief description of the various lesions might be of value in clarifying the subject in the mind of the non-dermatologic practitioner who seeks more light in this field of dermatology.

Certain lesions of the skin—such as lupus vulgaris, tuberculosis verrucosa cutis, scrofuloderma, tuberculous ulcers, postexanthematic miliary tuberculosis of the skin, and the disseminated miliary lupus of the face—are well known to be caused by an infection of the skin by the tubercle bacillus, resulting in the characteristic reaction to tuberculous infection elsewhere; namely, tubercle formation.

There are several other conditions which are considered to be tuberculous in origin, but which are variously explained as being caused by:

1. Toxins of the tubercle bacillus;
2. Metastases of small numbers of tubercle bacilli in a skin previously highly sensitized by an active or latent tuberculous process elsewhere;
3. True active infection by the tubercle bacillus.

Such diseases are: erythema induratum, the papulonecrotic tuberculids, lichen scrofulosorum, and the subcutaneous variety of sarcoid tumor. The histopathology of the

lesions of this group as reported by various observers varies from a simple inflammatory reaction to one approximating typical tubercle formation. Tubercle bacilli have at times been found in sections from all these diseases. It is now held by most students of the subject that these lesions are caused by the reaction of a highly sensitized skin to the invasion of small numbers of tubercle bacilli, this reaction more or less completely destroying the organisms.

There is still a third group of diseases which have been suspected of a tuberculous etiology. Prominent among these are lupus erythematosus and certain chronic exfoliating dermatoses. There is at present no proof of their tuberculous origin.

Sensitization plays an important part in the production of the skin lesions of tuberculosis. That sensitization of the skin occurs is evidenced by the positive tuberculin test present in nearly all these cases. In advanced general tuberculosis, and for a time following measles, the resistance is lowered, and the phenomena of sensitization are absent. Such a period following measles is apt to be followed by the appearance of multiple tubercles in the skin. In these cases of broken down resistance there is no reaction of the skin to the tubercle bacillus, and an active tuberculous infection occurs, not a tuberculid in which the bacilli are killed. More evidence of the sensitization of the skin is found in the fact that lupus vulgaris lesions temporarily flare up after the application of Moro's tuberculin ointment.

The diagnosis of tuberculous skin lesions is of special value in calling attention to a tuberculous process elsewhere. A tuberculid eruption in young children is sometimes the first noticeable symptom of a grave tuberculous infection. Other tuberculous lesions, particularly erythema induratum, are not infrequently found in robust and ap-

parently healthy individuals, and their diagnosis is of value in directing attention to a latent, or possibly active, infection in the chest or elsewhere.

Lupus vulgaris, (Fig. 1) the best known, and probably the most common skin lesion of tuberculosis, occurs as groups of brownish nodules of soft consistency which ulcerate and heal with considerable scarring and resultant deformity. There are often recurrences in the old scars, and these scars are also sometimes the base for future epitheliomata. Lupus vulgaris is analogous to, and closely resembles, the serpiginous lesion of tertiary syphilis. The chief points of differentiation are the softer character of the tuberculous nodules, and the recurrences so often present in the scars.



Fig. 2

Scrofuloderma, (Fig. 2) is an infection of the skin by continuity from tuberculous lesions of glands or bones. The common site is over the glands of the neck. The lesion is a firm infiltration which finally ulcerates. The large glands, when present, suggest the diagnosis.



Fig. 3

Tuberculosis verrucosa cutis (Fig. 3) differs from lupus vulgaris in the thick warty surface. This type of tuberculosis is caused



Fig. 1

by direct inoculation of the skin, as sometimes occurs from infected postmortem material. The lesions closely resemble blastomycosis. The latter is distinguished, however, by the miliary abscesses and by the presence of blastomycetes in the pus from them.

Tuberculous ulcers usually occur about the orifices and indicate an advanced internal tuberculous process. These ulcers are characteristically painless and have undermined edges.

As previously mentioned, following measles there is often an outbreak of disseminated miliary tubercles in the skin. This is a grave and sometimes fatal manifestation of general tuberculosis. This acute postexanthematic outbreak is to be distinguished from the chronic disseminated miliary lupus of the face, which is a benign dermatosis.

The dermatoses just described constitute the known true tuberculous infections of the skin. The following are the so-called "paratuberculoses" or "tuberculids".

Erythema induratum (Fig. 4) is characterized by exceedingly chronic, deep, violaceous infiltrations situated, by predilection, on the calves of the legs, occasionally on the forearms. There is a tendency to ulceration, and healing is very slow. Except for the fact that they are multiple and symmetrical, they resemble gummata.

The papulonecrotic tuberculids are indolent papular eruptions, the papules, as the name signifies, becoming necrotic in the center and healing with resultant depressed scars or pits. There are two varieties of this eruption, acnitis having a predilection for the face, and folliclis favoring the extensor surfaces of the arms and legs. The lesions are essentially the same.

Lichen scrofulosorum is an eruption of very small scaly papules occurring in groups, usually on the sides of the trunk. These le-

sions are less resistant to treatment than the other tuberculous conditions, and, being rather superficial, they do not leave appreciable scars.

The subcutaneous sarcoid tumors are considered tuberculous. They are sharply circumscribed infiltrations somewhat resembling the lesions of erythema induratum.

In the treatment of both the true tuberculous infections and the tuberculids, general measures—such as sunshine, rest, fresh air, and a liberal nutritious diet—are important. Tuberculin is often of benefit. General actinotherapy, from the sun or from artificial sources, is sometimes helpful, as in tuberculosis elsewhere. The intravenous injection of gold solutions has been used with beneficial results, but this form of therapy has not been sufficiently used to judge its true value at this time. In erythema induratum, papulonecrotic tuberculid, and sarcoid persistent arsenical therapy, particularly in the form of arsphenamin, is some times beneficial. Codliver oil is of value as in other forms of tuberculosis.

In most of these diseases the local treatment is even more important than the general measures. In lupus vulgaris, tuberculosis verrucosa cutis, and scrofuloderma, subintensive x-ray therapy is of great value. Small lesions of lupus vulgaris and tuberculosis verrucosa cutis are, in my experience, best destroyed by electro-dessication. This might well be used on larger areas when located where the scar would not be objectionable. Solid carbon dioxide can also be used to advantage in these conditions. Their treatment by the Kromayer lamp is an almost endless task.

In erythema induratum, subintensive filtered x-ray therapy is the local treatment par excellence, and has given gratifying results in my experience in those cases in which treatment has been persistent.

X-ray in small doses is beneficial in the papulonecrotic tuberculids.

As in all other forms of tuberculosis, so in tuberculous diseases of the skin, treatment, to be effective, must be persisted in. After the lesions heal, recurrences are not uncommon, just as in tuberculosis of other structures. It should be remembered that, when tuberculosis is found in one structure of the body, it is not unlikely that other structures also are involved, and the finding of these tuberculous skin lesions should be made the most of, in our fight against tuberculosis, in "rounding up" cases with unsuspected pulmonary and glandular involvement.



Fig. 4

CLIMATIC TREATMENT OF TUBERCULOSIS: A PLEA FOR A TUBERCULOSIS SURVEY.

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Read before the Forty-fifth Annual Meeting of the New Mexico Medical Society held at Carlstad, N. M., May 9 to 11, 1927.

Our progress in the treatment of tuberculosis has been gained mainly by empirical observations. The observations made by all physicians dealing with the question, are accepted as fundamentals in phthisiotherapy. Today no phthisiologist would deny that rest, good food and fresh air are essential in the treatment of tuberculosis. As a matter of fact, however great and varied our armamentarium in the treatment of tuberculosis may be, our therapy is always based on these fundamental factors.

It is obvious, however, that, besides these essential factors, there are also a number of others which play a great part in the cure of tuberculosis. The application and evaluation of these other means—such as artificial pneumothorax, thoracoplasty, climatic and other treatments—will greatly depend upon the personal experience of the individual doctor.

We, the doctors of the Southwest, lay a great and, it is my firm belief, just emphasis on the role the wonderful climate of the Southwest plays in the treatment of tuberculosis. The Southwest boasts that its climate is most ideal for the treatment of tuberculosis. It points with just pride to the fact that its cities were built, its industries are developed and its soil tilled to a large extent by tuberculars who came here seeking their health. These tuberculars were cured here in the physiological or, at least, in the practical sense of the term.

We cannot deny that tuberculosis, with proper care, is curable or, at least, amenable to treatment under various climatic conditions. But it should be borne in mind that the sending of a member of a family to a great distance for a prolonged cure, may mean financial disaster and the breaking up of the afflicted family. It is no wonder, therefore, that, as long as there is such a distinct disagreement among the medical profession as there is, in the question of climatic treatment of tuberculosis, many medical advisors will hesitate to advise climatic treatment for their patients before exhausting all the therapeutical means at their command. So it happens that patients are either advised against climatic treatment, or sent to a resort when in a condition already beyond all hope. According to E. A. Sweet's¹ statistics, among the out-of-state

tuberculars who died in the decade from 1904 to 1913 in Albuquerque, New Mexico, 57.8 per cent died within a year of their arrival. Among these deaths 15.6 per cent occurred within thirty days, and 30.9 per cent within six months, after arrival.

It was said in the controversy concerning climate—and this statement is often repeated—"that the difference in opinion is largely limited by geographical lines, i. e., the great majority of propagandists of certain climates are residents in those climates." This statement is true, but, scrutinizing it, we find that the larger percentage of these "propagandists" were converted to their conviction after they themselves had broken down with tuberculosis and, after having tried all other means, were mostly benefited by the climatic treatment they advocate.

The medical profession of the Southwest is composed chiefly of physicians who came here seeking relief from tuberculosis, and who have found the climate here very beneficial for their ailment. These advocates of climatic treatment may point to the fact that, should a physician living in an unfavorable climate break down with tuberculosis, he will, as a rule, seek climatic treatment.

Medical research has not cleared up yet the mechanism by which a climate influences the cure of tuberculosis. It is, however, safe to assume that the changes in the blood, the real increase in the amount of hemoglobin², and the increase of the lymphocytes and mononuclears⁴, brought about in the body by a high altitude, and then, chiefly, the greater insolation in the ultraviolet rays of the sun, are of paramount importance in the cure.

Such observations as those of A. Spengler⁵, who found in the early seventies that natives of Davos, who, after leaving home, contracted tuberculosis in lowland cities, invariably recovered their health on returning to their Alpine homes; or E. A. Sweet's statistical studies concerning the Southwest, are valuable proofs of the fact that a proper climate is of great importance in the treatment of tuberculosis. This latter author has found, for instance, that, of all the tuberculosis deaths in Albuquerque in the decade from 1904 to 1913, but 7.8 per cent were of people born in New Mexico. He has proven also that, while in the registration area, in the same decade, for every 9.1 deaths one was from tuberculosis, in Albuquerque the ratio was 10.1 to one. This fact is of greater importance when we consider that "the Mexicans are prone to the disease, and among them bad housing and unsanitary living conditions are common."

Furthermore, it is obvious that, as long as fresh air and sunshine play a fundamental part in the treatment of tuberculosis, a climate which offers abundance of sunshine, the possibility of being in the open air under the least inconvenience, and with the slightest interference of clothing in every season, must naturally be a very important factor in the treatment of the disease. The phthisiologists who disregard climate as a therapeutic factor, argue that cures from tuberculosis are observed under all kinds of climatic conditions. This argument, however, is beside the point.

Then, in selecting a therapeutic procedure, we have to choose those means which offer, in the greatest number of cases, the best possible results within the shortest time. A number of infectious diseases, for example, could be cured without the administration of a specific remedy. Yet the non-administration of antidiphtheric serum, in a case of diphtheria, is considered criminal neglect from a medical point of view. Why? Because no one can foretell with assurance whether, in a given case, the infection will be self limited and the patient cured without the antitoxin, or, whether it will lead to a disastrous end. There is no reason why we shall be guided in the case of tuberculosis rather by exceptional results achieved in small numbers, than by procedures which offer relief in the greatest possible number of cases. And the latter may be said concerning climatic treatment.

Moreover, in the case of tuberculosis we have to consider our cures not only from a pathological, but also from a practical, point of view. If we so far succeed in our treatment that our tuberculous patients are able to lead a useful life in the community with reasonable comfort and without further disadvantage to their health, we have accomplished much, even when we are unable entirely to restore their former health. One who knows the conditions here in the Southwest from personal experience, knows only too well that here the percentage of the tuberculous who are pursuing a gainful occupation is, indeed, a large one.

Yet, no matter how firmly the medical profession of the Southwest believes in the value of climatic treatment in tuberculosis, it still owes to the great medical world of the country the substantiation of its conviction with entirely unbiased scientific facts, which would be convincing enough for the opponents of climatic treatment.

What are the ways that would lead to a definite decision in this dispute? In my humble opinion, we could substantiate our

empirical experience on the basis of unbiased facts if we could determine:

(1) The morbidity and mortality rates of tuberculosis among the Southwest-born population in a given sector of a southwestern state;

(2) The same rates among the out-of-state born population, who were not health seekers;

(3) The mortality rate of the health seekers;

(4) The percentage of cures and improvements among the health seekers;

(5) The average duration of disability among the tuberculous population; and compare all these data with related statistics from other parts of the country.

Important and valuable work on these lines has already been done. As far as I am able to judge from the literature at hand concerning the Southwest, Sweet's work, to which I have referred above, is the most comprehensive. His studies, as also those of others—the Committee of the Denver Sanatorium Association⁶—deal, however, only with the scrutiny of the mortality statistics. As important as the mortality statistics are, they cover only one phase of this complex problem.

Are investigations on a broader field, embracing all the aspects of the problem, feasible? It is my belief that they are. Take, for instance, the possibilities most cities of the Southwest offer for these investigations. It is estimated that, in many instances, the larger part of the population of these cities came here as health seekers. These health seekers are from all walks of life—laborers, artisans, professional and business men. They came to the Southwest in the various stages of tuberculosis. Their age periods are as varied as their occupations. Both sexes are well represented among them.

As a general rule, this population belongs to the class of people which has to work hard for its living and cannot afford the leisure and luxuries of the well-to-do classes. Those who "chase the cure" live, to a great percentage, under conditions which are far from the ideal we demand in our hygienic sanatorium treatment. Under these conditions it would be a relatively easy task to estimate the effect the climate has on their disease.

On the other hand, comparing the data gathered in the many sanatoria of the Southwest with those of the institutions in other parts of the country, we should be able to judge the difference in results achieved under a favorable condition.

The medical and social surveys of a city

with a large number of inhabitants, offer data which we may expect to be conclusive in themselves on account of the large number of cases involved. There are also other important factors which we have to take into consideration. In such a study as I have outlined above, it is of paramount importance that every one concerned, that is, the whole population of the city—its civic, church and official organizations—shall wholeheartedly and sincerely cooperate in the prosecution of these investigations.

In a great number of the cities of the Southwest the tuberculosis problem is a living issue. Many of these cities expect their further development from attracting the tuberculous health seekers. It is obvious, therefore, that the intelligent cooperation of any city could be easily secured for a tuberculosis survey. It is in the very nature of such a survey that it cannot be carried out by an individual alone. Such a survey calls for organized effort.

At first thought such a survey seems to present insurmountable difficulties, but the Framingham demonstration of the National Tuberculosis Association has proven in practice that the health survey of a city of considerable size can be carried out. This demonstration has also led to far-reaching practical results. It has led to the foundation of the Life Extension Institute and to the periodic health examinations, which have already prolonged and saved the lives of countless individuals in this country. We may expect that a tuberculosis survey of a city of the Southwest will also lead to far-reaching results, which would benefit in particular the tuberculous of the entire country.

It remains now to discuss the means by which the money necessary for such a survey could be raised. Inasmuch as this survey would benefit various factors, it is evident that all those concerned beneficially should take their share in the investment it calls for.

First of all, we have to think of the National Tuberculosis Association, which holds in its ranks the leading phthisiologists and workers interested in the national fight against tuberculosis. We have to seek, therefore, if not the financial, at least the moral, support of this organization.

It is also obvious that, should this survey substantiate with indisputable facts the great value of the climate of the Southwestern States—as we have every reason to expect,—then the respective state and city in which this survey would be carried out, would be most benefited by these investigations. It is but natural, therefore, that it

would pay the individual citizens of a city, the civic bodies of the city and of the state, who are interested in the numerical and financial growth of their city and state, to lend their material support to finance such a survey.

Last, but not least, there are the Life and Health Insurance companies whose business is to deal in the lives of their policy holders. It means considerable financial gain for them if they can shorten the sickness and prolong the lives of their policy holders. The Metropolitan Life Insurance Company has shown, with the financial provisions for the Framingham demonstration, that it values highly the possibilities a health survey offers. There can be hardly any doubt that, by proper approach, the interest of the Life Insurance companies in a tuberculosis survey could easily be aroused, and their financial aid for the necessary investigations secured.

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DISCUSSION

DR. DWIGHT ALLISON, Las Cruces, N. M. (opening): Talking about making a survey of the country, some few years ago the reports showed that Colorado was second in the death rate for tuberculosis in the United States. A committee was appointed by the Denver Medical Society, headed by Dr. Henry Sewell. After some two or three years' correspondence with the Registrar of Deaths and with doctors who wrote a death certificate which was not entirely clear, they found, by eliminating the people who came to Colorado originally with tuberculosis, that the state was next to last in the death rate for that disease; that about 50 per cent of the people who died of tuberculosis died in the first three months of their residence in Colorado, probably due to over-exertion and through having to go to work when not able to do so. They frequently had a hemorrhage and died. A number of deaths reported as from tuberculosis after one year's residence, were found to be complicated with some other disease.

I think if Dr. Pollak would take up this matter with Dr. Henry Sewell of Denver, he can get the exact figures on this survey, which was conducted covering a period of several years.

DR. F. D. VICKERS, Deming, New Mexico: I believe it difficult to judge accurately of the value of climatic treatment at the present time. The doctor in this part of the country can prove to his satisfaction that the dry climate of the high altitudes of the southwest is of great value—other things

being equal; and the doctor in the east has had it figured out for him that "climate" is a very small part of the cure. Just who figured out the exact per cent and how he arrived at the conclusion, I do not know.

In the east, it is said, the very rich and the very poor are the only ones who can get good medical care and good hospital service; in the southwest, it is only the well-to-do who can get good care for tuberculosis.

I believe, to get the proper treatment to the great number of people who come to the southwest for tuberculosis, we must have institutions endowed by industrial organizations, religious bodies, lodges, and the state, so that the patients may get treatment for a sufficient time when they do not have money. It is most common now for a patient to have too much enthusiasm over improvement, to get back east too soon and relapse. And then it is pointed out that our climate does not cure.

To get exact statistics under present conditions, I believe impossible. I understand that not everybody with tuberculosis can go to the Southwest. Well, then, who is to go? I would suggest that those who do not respond to treatment at home should seek change of climate if possible, and before they have become far advanced cases; and I would point out to the eastern men that we have a great number of far advanced cases come to the Southwest with no means of proper treatment for a sufficient length of time, and they give our climate a bad name. They die out here, raise the death rate of the Southwest and lower the death rate of the East.

DR. F. P. MILLER, El Paso: I agree with Dr. Pollak that there has not been enough tuberculosis research work in the Southwest. I know this is true of other parts of the country also, but the Southwest has several peculiar problems. The United States Government has made several surveys of the indigent tuberculous in the southwestern states and these have been of great value. To make this work of increasing value, these surveys should be rechecked.

The Metropolitan Life Insurance Company has carried on considerable tuberculosis research work and they have also accomplished an important work along educational lines among their policy holders. Their reports prove that they have been able to reduce their mortality. They built a sanatorium for their employees and, after careful physical examinations, placed their tuberculous employees therein. This plan of discovering the early tuberculous among the employees and supplying proper treatment, has accomplished much good for the employees and has resulted in a decided educational benefit to all who come in contact with those who have benefited by this sanatorium care. I am unable to give exactly what per cent of the total number of patients who were discharged as arrested, but, of the incipient cases, after a stay in the sanatorium, 87 per cent were able to return to their work and the majority of these were able to earn more than they had ever earned before. Less than 7 per cent were earning less than they earned before the discovery was made that they were tuberculous. I am sure the officers of this Company feel that they have been well repaid for the money expended.

I believe the greatest enemy to the proper authorization of climatic treatment of tuberculosis is the National Tuberculosis Association. I have seen many statements in their literature refuting the idea that climate is a factor to benefit the tuberculous. Recently, in Chicago, one of their representatives advised strongly against any national movement that would tend to erect sanatoria in the Southwest for the treatment of tuberculosis.

Regardless of all their teaching and effort, the United States Public Health reports show that the migration of the indigent tuberculous to the great Southwest has increased.

I often ask those who do not believe in climatic advantages for the treatment of tuberculosis, why the architects are so careful to build and locate their sanatoriums in the east so as to insure, as far as possible, their natural advantages as to altitude, exposure to sunlight, freedom from dust and vapors, if they are not trying to imitate the climatic conditions which are so easily obtained in the Southwest. They are perfectly willing to advocate that their patients go to the Adirondacks because of climatic conditions. Each city and state directs the building of sanatoriums remote from their cities. Why is it that the Bureau of Standards of the United States Government sends men across the country to study sunlight in Denver, Phoenix and Mt. Wilson, and then spends thousands of dollars in trying to reproduce in Pittsburgh a carbon light which will imitate the sunlight in those localities? Why do individuals, under the advice of their physicians, build extensions in the windows of their houses in order that the patient's head may be out of doors? I answer that for no other reason than to get the advantages of fresh air and sunlight. These are questions that they avoid answering and break down all their propaganda.

In a recent survey of 600 indigent tuberculous in El Paso, 57 per cent stated that they came there on the direct advice of their physicians. In the private sanatoriums in the Southwest, I am sure that you will find 75 per cent have been referred by physicians who feel certain that climatic conditions are a decided benefit to their patients. I believe that a tuberculosis survey made by the National Tuberculosis Association, as to the actual advantages of climatic treatment, would yield more good to the tuberculous than their flat statement and denial that there is no value in climate.

DR. G. WERLEY, El Paso: We made some observations in El Paso a number of years ago, which I think Dr. Miller will remember. In looking up the death records of people who died from tuberculosis, that little survey showed us that there was very little tuberculosis developed in El Paso among our native American population. I think that is probably the best evidence as to what climate does. I think almost anybody who has lived in this southwestern climate will say that people who were born in this country do not develop tuberculosis anything like the way they do back east. I do not know whether there are any statistics on that point or not.

One of the interesting things I have seen in our Post-mortem Club we have at El Paso is the condition of tuberculous lungs after 25 or 30 years. A doctor, an old-timer in the Southwest, died at El Paso last year. I remember, when I came to El Paso, he was considered one of the worst tuberculosis cases in town. He was having hemorrhages and gave general evidences of an advanced case of tuberculosis; it was understood that he had been in a sanatorium in the northern part of New Mexico for a long time. Well! when he died, we held a postmortem and, if one did not know his history, I do not believe he would have been particularly attracted by the condition of the lungs. There were no cavities; the lungs were very adherent, with very much thickened pleura at both apices, but were air-containing and contained very little evidence that they had ever been tuberculous. We have had one or two other cases which showed virtually the same thing.

I think that is very encouraging to anyone doing work on tuberculosis—to find that a lung which

has been very badly damaged can be healed up entirely and look almost new again.

DR. M. POLLAK (closing): I thank you for the discussion and wish only to state that something has to be done to convince the medical world our climate is a decided benefit, and that we are practicing here, but the question is how to get this over and get it further back east.

A PLEA FOR MORE GENERAL POSTOPERATIVE USE OF THE DUODENAL TUBE.

W. L. BROWN, M. D. and C. P. BROWN, M. D.
El Paso, Texas

Read at the Forty-fifth Annual Meeting of the New Mexico Medical Society, at Carlstad, N. M., May 9 to 11, 1927, by Dr. K. D. Lynch, El Paso, Tex.

As we, in numerous papers, have gone into the theory of the formation of toxemes in the "segment of toxicity" of Whipple's, in postoperative, paralytic, and mechanical obstructions, we will confine the discussion today more to the practical application of stomach drainage in these conditions.

After almost six years of postoperative stomach drainage with the duodenal tube, we no longer have any doubt but that toxic material is regurgitated into the stomach. Neither do we have any doubt about its drainage from the stomach giving definite relief from toxic symptoms. In other words, if there are serious toxic fluids in the duodenum and jejunum, they are being constantly regurgitated into the stomach and may be drained from there just as well as from the jejunum by way of surgical jejunostomy.

Many times, in cases of obstruction and peritonitis, we have been able to withdraw a quart of fluid from this stomach, although the patient was constantly vomiting. In other words, vomiting does not mean that the stomach has been emptied of either fluids or gas. In fact, we have inserted the tube and been able to hear the escaping gas all over the room, although the patient had just been vomiting.

We are now using it almost as a routine in all abdominal operations of any seriousness where vomiting would be especially painful or distention would compromise the results of the operation. In cases of difficult abdominal hernias, or other hernias, where we wish to guard our suture line from the effects of vomiting, we immediately pass the tube and leave it in place until the period of vomiting is over. If the patient is sufficiently out of the anesthetic to swallow, there is usually very little trouble in passing the tube.

Being able to prevent vomiting and, thereby, the accompanying pain, in operations on the gall-bladder, stomach, and all other seri-

ous abdominal procedures, is one of the greatest recent advances in surgery. The patient's ability to drink water freely under the same conditions is another tremendous advance toward increased comfort.

In all stomach operations, such as resections, ulcers, and gastro-enterostomies, we pass the tube before the patient is taken off the table, and leave it in place for from twenty-four to forty-eight hours. In these cases the stomach is kept empty by aspiration and frequent washings with sterile water.

When inserting the tube at the end of operation, before the patient is sufficiently awake to swallow, and because of the dryness of the throat, we find vaseline a more satisfactory lubricant than the lighter oils, as it is more adherent to the tube. Also, in these cases where the patient is still asleep, we never inject any water until we have withdrawn stomach contents, which assures us that the tube is not in the air passages nor curled up in the esophagus. In either case, injecting water might be of serious consequence.

After the use of five per cent cocaine on an applicator, we pass the tube through the nose because it is less irritating to the throat, cannot be bitten, and is not in the way during an anesthetic. It should be passed to the first mark only as it will curl up in the stomach if too much is inserted, and, therefore, may not empty the stomach of either fluid or gas. The medium sized Levine tube, number 14, seems to be the most satisfactory for general use.

The longest we have ever left the tube in place was seven days. It sometimes becomes irritating to the throat and nose, under which circumstances it may be removed and reinserted later.

Ordinarily it is left hanging by the side of the bed, the patient is given an abundance of water to drink and the water is allowed to siphon off. After improvement ensues and it appears that the patient would retain the water, the tube is hung up on the head of the bed to stop siphonage. It should be let down again and stomach aspirated immediately if nausea occurs.

We have just operated on a man who had a large gangrenous gall-bladder. The tube was passed into his stomach before he left the table and was allowed to remain. He had no vomiting or nausea. Therefore, upon my visit in the evening, I removed the tube. Before midnight he had much nausea. The nurse re-inserted the tube and withdrew a large quantity of fluid from his stomach. She again left the tube in place.

He would not then consent to its removal until two days later.

This has been a very frequent experience. Patients who have enjoyed its benefits, are not inclined to do without it. We have found this especially true in those who had had previous operations followed by much nausea and vomiting.

The tube accomplishes the following: (1) It relieves conditions due to gas and regurgitated intestinal fluids; it is a vent pipe; (2) it effects interrupted or continuous lavage of the stomach, and, in some cases, of the duodenum; (3) it gives relief from nausea; (4) it makes possible the free drinking of water and thereby relieves that most distressing symptom, thirst; (5) it permits transgastric feeding; (6) it relieves toxemia; (7) it is a port of entry for all kinds of medication; (8) it improves the feelings of the patients; they often beg for its return after they have once experienced the relief afforded by its use.

DISCUSSION

DR. P. G. CORNISH, Jr. (Albuquerque): In our post-operative cases, we have all seen the tremendous amount of relief obtained in those cases that have been vomiting, those with regurgitation, those of acute dilatation of the stomach and other conditions of mechanical obstruction, with the ordinary gastric lavage. This gastric lavage when repeated is sometimes disagreeable. It is rather a hard thing to go through for patients with large abdominal wounds necessarily tender and painful, and sometimes, for that reason, we hesitate to use lavage when we know it should be used—because patients object to it on the ground of the pain and discomfort given while it goes on.

The use of the duodenal tube answers practically the same purpose as gastric lavage, except that it keeps up continuous drainage rather than the intermittent drainage through the passage of the ordinary stomach tube.

In certain cases, for instance cases of resections, ulcers and things of that sort, gastric lavage, while safe if used properly, sometimes might increase the pressure on the sutures and cause leakage. In fact when we do pass stomach tubes after operations, we always have a slight timidity in doing it for the reason that we think we may put on excess pressure and cause trouble. By the use of the duodenal tube, we can overcome all those fears and still do the job we aim to do. We frequently pass the duodenal tube while the abdomen is still open, in that way being sure the tube goes through the pylorus and the things that give us regurgitation, vomiting, etc., would not keep our tube out of the duodenum; we are sure it is in there at the time.

I do not think that the duodenal tube is always a life saver in cases of acute dilatation of the stomach. I have seen it used in these conditions where you could get the stomach absolutely clear, but still your patient will persist with certain symptoms and will not recover.

The duodenal tube is apt to be overlooked in the treatment of post-operative cases because it is such a small thing, I expect it simply escapes the mind of the surgeon, but I am sure we will all find it a very useful adjunct when used in certain types of cases.

I am sorry Dr. Brown is not here to give us some of his experiences on the subject, though his paper is very complete and gives us, I think, all the fundamentals in what he is striving to do.

ANTERIOR POLIOMYELITIS

(A Case Report)

S. I. BLOOMHARDT, M. D.
Phoenix, Arizona

Read at the Monthly Staff Meeting of the Deaconess Hospital, Phoenix, Ariz., Sept. 26, 1927.

A male, twenty-two years of age, married, had a very active summer, driving between coast and Phoenix several times. Six days before admission to the hospital he had an annoying headache over the occipital region. This was continuous. An osteopath was consulted, and his treatment was administered without relief. There was at that time a slight fulness in region of right ear. The osteopath removed some wax. Following the osteopathic treatments, he went swimming in the cold Country Club pool. The headache continued, and there was some stiffness of the neck. Two days before admission, I saw him for the first time.

There was no temperature and the reflexes were normal. On the morning of admission the patient showed slight temperature, the headache was more severe, and the neck was a trifle more rigid. The reflexes were slightly accentuated. There was a history of nausea with severe vomiting, for several days. He complained, at this time, of pain and aching in extremities.

The examination revealed a well nourished, healthy appearing young adult male. Eyes were dull, and reacted to light; pupillary reflex was normal. There were several small boils on the back of the neck and occipital region. The neck was stiff and tender; when moved he had considerable pain. The heart and lungs were negative. The abdomen was negative except for the appendectomy scar. The patellar reflexes were slightly accentuated. The spinal fluid count was 155, with 75 per cent lymphocytes; no tubercle bacilli or other bacteria were found on smears; no growth on culture.

Diagnosis of acute anterior poliomyelitis was made. The patient was given the anti-streptococcus poliomyelitis serum, and made a steady slow convalescence. He was able to leave the hospital in six days. He has made steady improvement since and now appears to be entirely well.

Acute Anterior Poliomyelitis, also called Heine-Medin Disease and Infantile Paralysis, is an acute generalized infection, due to a filterable virus, occurring both in epidemics and sporadically. It is characterized anatomically by wide-spread lesions of the nervous system, with special localization in

many of the cases in the anterior horns of the gray matter of the spinal cord; hence, the common name.

Historical. It has the earmarks of a new infection; although, in delving into old literature, one finds instances of sudden paralysis in babies, said to be due to carelessness of the nurse. May not some of them have been cases of infantile paralysis? Certainly it has become more widespread and more common in late years, and it seems the increase cannot be wholly accounted for by the fact that it is now better known and more readily recognized than formerly. It is called the Heine-Medin disease from the fact that Heine of Connstadt, in 1840, first established the disease as a clinical entity, and Medin, in 1890, was the first to study carefully an epidemic and to recognize clinical types as the cerebral, bulbar, polyneuritic, and ataxic forms. The disease, in 1909, was transmitted to two monkeys by inoculating them with the spinal fluid of a child who had died of the disease. The inoculation period is given as from one to three days up to fourteen days; by other authorities as one to eighteen days. Experimentally, in the monkeys the inoculation time is three to twelve days.

Symptoms. The naso-pharyngeal symptoms are common. The first stage is characterized by fever, often with nausea and vomiting, drowsiness and heaviness, irritability and stiffness of the neck and back, twitchings and jerkings, sometimes by pain and tenderness in the extremities; general tenderness (hyperesthesia) on handling is highly common. This stage lasts a few days and then the paralysis appears—if it is to appear. The temporary paralysis is due to inflammatory and toxic changes while the permanent paralysis depends on destruction of the nerve cells. The spinal fluid shows an increase in the number of cells, up to about 200 per cu. mm., which distinguishes it from cerebro-spinal fever and other acute forms of meningitis.

Forms. There are a number of forms: (a) the abortive form; (b) common poliomyelitis or spinal form; (c) progressive ascending form; (d) bulbar form; (e) meningitis form; (f) cerebral form; (g) cerebellar form; (h) polyneuritic form.

Diagnosis. The diagnosis is difficult and many diagnoses are made only after paralysis appears. Some cases run a course like an acute infection; others have the picture of Landry's paralysis; in still others meningeal symptoms predominate; or there may be hyperesthesia and pain, with the picture of a polyneuritis. The prognosis is variable.

Treatment. Rest and usual treatment

should be given during the febrile stage. Salicylates can be given for pain and discomfort, with opiates if necessary. Lumbar puncture should be done at once and repeated if symptoms indicate the necessity. It may be repeated daily. In the meningeal form, hot packs are useful. Serum should be given, though there is some question as to its value. Certainly, at least, it gives one moral courage and the feeling of doing something; most authorities agree that it, at least, lessens severity if given early and in good sized doses. Blood serum from one who has had the disease, if available, is useful in the early stages.

One attack confers a high degree of immunity; second attacks are unknown. No racial immunity to the infection is known, although it is, in most part, confined to the white race.

The prevention of deformities in paralyzed children is important. Massage, exercise and all active measures are contraindicated during the acute stage and as long as there is tenderness. Special attention must be given to maintaining a normal position of the paralyzed limbs so as to prevent deformities, which develop quickly. As soon as acute symptoms have subsided, muscle training should be instituted.

Transmission and Epidemiology. Many theories have been advanced as to the mode of transmission, but as is so often the case when many theories are advanced in the explanation of something, the answer is "we know not." So, we have the contact theory, the insect borne theory, milk borne infection, air borne theory, etc. The probabilities are that infantile paralysis is one of the diseases, like typhoid fever, which is spread in more than one way. It is the consensus of opinion that it is more widespread than indicated by the number of paralytic cases. Undoubtedly many cases are mild and escape notice, but leave protection. No definite or effective system of prevention can be formulated until we are sure of the mode of transmission. Health authorities are justified in requiring cases to be reported and isolated, with all preventive measures applied. However, we can have no confidence in our prophylactic measures, which resemble the old shotgun prescriptions. At the same time, it is an infectious disease and precautions are necessary. The period during which the isolation should be maintained cannot even be guessed at. The disease never has shown a tendency to spread in children's asylums, hospitals and other institutions.

Infantile paralysis, as a rule, does not spread in families. Only 4.3 per cent of

8,634 families attacked in New York in 1916 had more than one case. When multiple cases do occur in a family, they usually come down together or within a short time of each other. This signifies simultaneous infection from a common source.

The United States has been widely affected; from 1910 to 1914, 18,800 cases were reported and 31,500 in the next two years. The disease was progressive; epidemics grew in extent and intensity, until the disease became pandemic. In 1916 it swept the country, there being 6,000 deaths in 29,000 cases. This epidemic was the worst in history; the virus was sown broadcast and no region was spared.

A peculiarity of the disease is that while it is a warm weather disease, it is not as common in warm countries. Very few cases are ever seen in the tropics. Every country, however, is seeded with the virus. In 1924, there was an unusually severe outbreak in Iceland and also in New Zealand. Only sporadic cases occur in winter; it reaches its peak in August and early September. The disease is not influenced by social or economic conditions. It prevails in good and bad sanitary conditions. It spares neither the rich nor the poor, clean nor dirty, wise nor foolish, strong nor weak.

It is a disease of childhood; 65 per cent are under five years of age and 95 per cent under ten years. Any age may be affected, however. The average fatality is 20.8 per cent. The death rate is lowest from one to five years, and becomes proportionately higher as age advances.

DISCUSSION

DR. O. H. BROWN said that we should remember that infantile paralysis may affect any age, and that the patients may pass through to convalescence without the paralysis being manifest. The disease has two stages; in the first stage there is an acute illness, which might be a bad cold or any mild infection; the patient apparently makes an improvement, and then follows the second stage in which the paralysis is found. He said that it was his opinion that the older children from 14 to 20 years are apt to be affected the most seriously. Adults ordinarily have the condition mild, if at all.

DR. MILLS said that he had learned that some of the Los Angeles physicians are having good results with the immune serum taken from recovered cases.

DR. SHARP said that he had understood that some of the physicians believed that the patients who were given the anti-streptococcus serum ran milder courses than those which did not have it.

DR. WILKINSON remarked that x-ray and static applied to the spine, after the acute stage is past, does a great deal of good.

for various troubles, among which was a chronic, moderately severe asthma. This had begun about twenty-five years before, as well as she could estimate. It remained with her without great variation throughout the seasons. The history of her case led me to suspect common articles of her diet as etiologic agents.

Sensitization tests to foods, however, were unquestionably negative. Then I tested her against many other substances, 150 to 160, the number of test substances I possessed five years ago. Included in the tests were a limited number of bacterial proteins. She reacted to none of them save one—pertussis. This reaction was clear cut.

She was promptly started upon a highly dilute pertussis vaccine. Improvement was manifest within a week or even less.

She was accustomed to the use of a hypodermic, her finances were limited and she asked to be allowed to give herself the injections and to return to me from time to time for more concentrated suspensions of the vaccine. This I consented to do. All went well for a few weeks. She then got a notion that if a little does so much good more will do more good, or that the vaccine was innocuous; she increased her dosage faster than according to my instructions. Her asthma returned as a response to the increased doses.

Up to this time she had been skeptical, I think, about the pertussis being the etiologic factor. The reaction and subsequent ones convinced her, however, that the diagnosis or, at least, the treatment, was correct.

Reports from her up to three years after her first relief indicated that she was having no return of her asthma.

It is an interesting speculation as to whether the pertussis bacilli were being harbored by her body these twenty-five years or whether other bacteria in her body were throwing into her tissues a toxin closely enough related to pertussis toxin to produce a sensitization to pertussis toxin. It would also be interesting to know if she is well at present and if she is likely to continue in good health.

My own experience teaches me that sensitization to bacterial proteins or products is a reality. We also know that bacteria tend to become permanent parasites or guests.

The conclusion seems warranted that this person had a chronic pertussis infection which produced her asthma and she was greatly benefited by treatment with diluted pertussis vaccine.

The suggestion arises from this case that bacterial sensitization may be of such frequency and importance as to demand routine search for it.

ARTHRALGIA FROM PERTUSSIS TOXIN

A Case Report

ORVILLE HARRY BROWN, M. D., Ph. D.

A woman of advanced years, probably nearer seventy than sixty, presented herself

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APPROVED HOSPITALS IN ARIZONA

The list of "approved hospitals" issued by the American College of Surgeons, for 1927, includes eight hospitals in Arizona, as follows:

Mercy Hospital, Prescott—Fully Approved.
Veterans Bureau Hospital, Tucson—Fully Approved.

Miami-Inspiration Hospital, Miami—Fully Approved.

St. Joseph's Hospital, Phoenix—Fully Approved.

Arizona Deaconess Hospital, Phoenix—Fully Approved.

Gila County Hospital Globe—Conditioned.

St. Mary's Hospital, Tucson—Conditioned.

Southern Methodist Hospital, Tucson—Conditioned.

"These hospitals have adopted the fundamental requirements for the right care of the patient and the rendering of the broadest community service as provided for in the minimum standard laid down by this organization (College of Surgeons), charged with the great movement known as Hospital Standardization."

Conditioned approval indicates that the hospital has accepted the requirements which result in the best care of the patient, but for lack of time or other acceptable reasons, have not put them fully into effect.

MEDICAL PUBLICITY

In the Arizona Republican (Phoenix), of October 21, there is a news item from Washington, D. C., telling about the plan of medical publicity in Cerro Gordo County Medical Society in Iowa, with the brief statement that this is said to be the first general advertising done by doctors in the United

States. It is this latter statement that we wish to comment on here.

The El Paso County Medical Society has been engaged in a very similar activity for more than two years, running paid advertisements in the daily newspapers of El Paso, over their name, "El Paso County Medical Society." From the trend of the article in the Republican, it seems that the Iowa society has followed very closely the plan of the El Paso doctors, and used much of the same material.

There is no question at all that publicity of this sort will come to be the rule in any community whose medical profession is properly organized. It is sanctioned by the American Medical Association, is being actively fostered and engaged in by such organizations as the Gorgas Memorial, and will undoubtedly soon become general over the country.

FOLLOW-UP THERAPY ON POLIOMYELITIS IN NEW MEXICO

The comprehensive and beautiful piece of public health work done in New Mexico by the Bureau of Public Health, in their epidemic of poliomyelitis, did not cease with the subsidence of the epidemic. Realizing that the state had an obligation to the dozens of crippled children left by the ravages of this outbreak, the Bureau has brought an expert physiotherapist from New York, who will spend six months in the state and instruct the physicians of any community, together with public health nurses or parents of the crippled children, in the principles of deformity prevention, massage, and exercises required to bring back such function as may be possible.

This seems to be an excellent plan, and

from the reports so far received, is one which is thoroughly appreciated by the citizens in New Mexico. It is sometimes difficult to secure the hearty approbation and full understanding from the public, over some plan for preventing disease, while a project which aims to cure manifest disease or to relieve the suffering which follows in the wake of disease, is given a cordial and sympathetic reception. From this action should come a more cordial relation between the New Mexico Bureau of Public Health and the people of that state, which would not be the least of the desirable results to follow.

Miss Mollie H. Donnelly is the physiotherapist who has been engaged for this work. The final results will be watched for with interest.

COLLECTION AGENCIES

Somewhere in the perusal of a large assortment of medical journals, the editor has seen the statement that physicians in any community can nearly always find some attorney, merchants' association or chamber of commerce, who will undertake the collection of their unpaid accounts, and make larger returns to the physicians than can any foreign collection agency.

Physicians will do well to bear this in mind when the representative of some collection agency comes into their office, with fine words and big promises about collections. The Federal Credit Bureau of San Francisco is a concern which has left many physicians in Arizona sadder and wiser about collections. Their approach is quite ingenious. The agent usually introduces himself by saying that he has run across a patient who owes the doctor a bill and he (the agent) can collect it. In some instances he even says that he HAS collected \$5.00 or \$10.00, and asks for some more bad accounts which he offers to collect. If, among these bad accounts, he secures one or two good ones, he is fixed. He will collect the good ones and from the collection, deduct charges for "tracing" the bad accounts. One physician in Arizona for whom collections amounting to \$47.50 were made from two patients, received check for \$9.75 in full, the balance of the amount being charged to him for "tracing" some twenty-five bad accounts and finding out that they were not collectible.

Verily, the doctors are the cream of the "come ons" and no one knows this better than oil stock salesmen and collection agencies.

DR. LEONARD WOOD: PIONEER ARIZONA PHYSICIAN

No medical history of Arizona would be complete without recording the activities of Lieut. Leonard Wood, a young medical officer on the staff of General Crook, during the Indian campaigns against Geronimo, in 1886. Chiefly because of the fact that he began his career in Arizona, rather than the long and honorable career terminated by his death in 1927, the following tribute is copied from the September issue of THE ATLANTIC MEDICAL JOURNAL:—

General Wood, "America's first proconsul," died in Boston on August 6th, following an operation. The medical profession is proud of his achievements, for his career has not been surpassed for sheer devotion and inspiring sacrifice of self to duty. He was graduated from Harvard Medical School in 1884. He was dismissed from the hospital where he was serving an internship for an infraction of the rule forbidding interns to operate, because he did a successful emergency operation on a child. Thus early in his medical career he showed he was a man of action. He was commissioned an assistant surgeon in the Army in 1886 and served as medical and line officer in the great campaign of 1886 against the Apache Indians. In recognition of that service he was awarded the Congressional Medal of Honor in 1898. To the old Indian fighters he was known as "Bull Bison." He was "a lean, clean-cut, yellow-white-headed contract doctor" who "won his commission as a fighting man in the sun-smitten halls of the canyons and deserts of the Southwest."

With Theodore Roosevelt, then a civilian, as lieutenant colonel, and Dr. Wood as colonel, he organized the "Rough Riders" for service in the Spanish-American War. He was chief of staff and father of the "Plattsburg Camps."

Dr. Wood's career, in many respects, is one of the most remarkable of our national history. The medical profession is proud of his accomplishment in cleaning up Santiago, which a sea captain said "could be smelled ten miles out at sea." He developed yellow fever at this post, but most fortunately recovered. In 1899 he was made governor-general of Cuba. It was the commission appointed by him that solved the mystery of yellow-fever transmission. Lord Cromer, British maker of modern Egypt, described his government of Cuba as "the greatest piece of colonial administration in all history." The brilliancy of General Wood in the Philippines and in Cuba attracted the attention of the world.

As chief of staff of the Army, he left no stone unturned to place it on a modern basis. He was a foe of pacifism, and was the father of military preparedness, as expressed by training camps of the Plattsburg type, for the development of civilians for service in the reserve corps. In the early part of the World War he suffered many rebukes from the Wilson administration, and when the United States entered the war, he was "sidetracked" and sent to Camp Funston, where he trained the Eighty-ninth Division, only to be removed from command on the eve of its departure overseas. He was a candidate for the presidency, but the Republican convention at Chicago named Warren G. Harding. What a wonderful thing it would have been to have a physician as president of our country! A year later the press announced that he was about to become provost of the University of Pennsylvania, but he was "drafted" for the "Islands,"

where he was supposed to serve for a year, but remained for six years.

The General's physical misfortunes are familiar to most physicians, but his certification by a medical board, as "fit for active field service" in 1917, when he was the ranking officer of the regular army, has been vindicated by his activities in the last ten years. While in France observing warfare, prior to the entry of the United States into the war, he was wounded by a shell fragment.

Shortly before leaving the Philippine Islands this summer, where he was serving as Federal Administrator, he was operated upon for double hernia. He reported, despite his poor physical condition, to President Coolidge, at the Summer White House in North Dakota, and submitting again, on account of brain pressure, for the second time to the surgeon's scalpel, in a Boston hospital, thus suddenly ended his splendidly busy career.

Medical officers subordinate to him recently in the Philippine Islands have told us of his continued interest and sympathetic cooperation in their warfare against leprosy and other forms of sickness and disease.

Just previous to submitting to operation, he delivered an address in Manhattan in advocacy of a fund of \$2,000,000 now being quietly collected in the United States to alleviate, study, and prevent leprosy. The experimental work will be conducted on the Island of Culion, in the Philippines, where there are 5,200 lepers. Dr. Wood stated that "It has been proved that cures are possible at nearly any stage of the disease, and more likely if treatment is started quickly."

Interment took place in the Rough Rider's Section at Arlington Cemetery, Washington, D. C.

It is said that General Wood left a diary containing the story of each day, dictated before the night passed. May it soon be published, telling in his own words the story of his life.

Soldier, surgeon, administrator, statesman—his work is done, and long will be remembered, although he deserved greater recognition than his country gave him.

FORREST F. FADELEY (Albuquerque, N. M.)

Dr. Forrest F. Fadeley, who had practiced in Albuquerque for fifteen years, died at his home in Hampton, Va., on September 30th.

Dr. Fadeley practiced the specialty of urology, and was a member of the Bernalillo County and the New Mexico Medical Societies. He was a graduate of George Washington University Medical School, class of 1904, locating in Albuquerque in 1912. He was a member of the American Urological Society. He was unmarried, and the loss from the medical fraternity of Albuquerque will be keenly felt.

GRANT COUNTY (N. M.) MEDICAL SOCIETY

The Grant County Medical Society met in monthly session Sept. 30, 1927, and roll call of the members present were as follows Drs. Browne, Parmenter, Edwards, Danielson, Davis, Kramer, Frazen, Pollak, Lacy, Ferrell, Groom, McFarland, Groves, Robinson, Wood, Colvard and Mr. Stockton.

Minutes of the last meeting were read and approved.

Dr. Danielson read notes from case of orchitis

bilateral without perioritis. This was a very interesting and unusual case. Discussion was entered into by most all present.

Dr. Pollak's paper on bronchial asthma, case report and postmortem findings was well presented and was a real treat to all present.

Dr. Kramer presented notes and x-ray films of an interesting case of primary carcinoma of lung. Stained section of an excised gland was thrown on the screen by means of the projectoscope.

Meeting adjourned at 10:30.

J. P. Wood, Sec. and Treas.

D. Kramer, President.

NO POLIOMYELITIS IN EL PASO

The El Paso Times of October 7th quotes DR. P. R. OUTLAW, assistant city health officer, to the effect that there has been only one mild case of poliomyelitis in that city. This is a very interesting illustration of the totally inexplicable appearance of this disease. With New Mexico suffering from a severe epidemic, El Paso, which is geographically a part of New Mexico, has entirely escaped up to that time. We hope that it will continue free from this infection.

B. J. WEIGEL, of Albuquerque, N. M., a member of the staff of the Albuquerque Sanatorium, sailed from New York on September 15, for Europe. He expects to spend several months in the University of Munich in special work in tuberculosis.

DR. L. E. WIGHTMAN (Globe, Ariz.) WEDS

On the evening of October 7th, Dr. L. E. Wightman, one of the pioneer physicians of Globe, Ariz., was married to Mrs. Ida Rocca, also a resident of Globe all of her life.

Dr. Wightman has practiced in Globe for about thirty years, and the members of the Arizona State Medical Association join with the Gila County Medical Society in good wishes for the doctor and his bride.

VIOLET RAY INTENSITY REPORTS IN TUCSON

Through the courtesy of the Desert Sanatorium, near Tucson, Ariz., the Tucson Citizen will add to its daily weather reports, the record of the Ultra-violet ray intensity for the preceding day. This sanatorium is said to be one of three places in the United States equipped with a radiometer, and the Tucson Citizen claims precedence over all other daily newspapers in presenting such climatic information to its readers.

EL PASO PERSONALS

DR. IRVING McNEIL has presented the El Paso County Medical Society with bound volumes of the Journal of the American Medical Association for twenty years. This very valuable addition to the society's library was accepted with a note of thanks from the society.

DR. R. E. McBRIDE, of Las Cruces, has been a frequent professional visitor in El Paso the past few weeks.

DR. E. B. ROGERS reports that there is quite an epidemic of tertian malaria in the valley about Hatch, N. M. Dr. McCamant states that there have been a number of cases in the upper valley about Las Cruces and Dona Ana, during the past summer.

DR. WALLER has closed his office in El Paso and moved to Kansas City, Mo., where he expects to locate.

DR. R. B. HOMAN was operated upon at the Masonic Hospital, October 8th, for hernia. He is convalescing rapidly and will soon be out of the hospital.

SISTER DEMETRIA, for twelve years Superior

at Hotel Dieu, was transferred to a hospital at Mobile, Ala., Sept. 25th. The physicians of El Paso, and the entire community, feel keenly their loss in this transfer. However, El Paso is fortunate in having assigned to the Hotel Dieu, Sister Vincent, formerly Superior of St. Paul's Sanitarium of Dallas, one of the largest hospitals in the state. Her splendid executive ability demonstrated in the larger institution will be a wonderful asset to Hotel Dieu and to the El Paso people.

ARIZONA PERSONALS

DR. A. M. TUTHILL, of Phoenix, has recently returned from an extended visit in the east. Between his tales of his wrestling bouts with the tiller of a sail boat in Wood's Hole, near Boston, he is willing to talk about his observations of the work of Dr. H. P. De Forest of New York upon the spine, and of Dr. H. R. Allen, orthopedist of Indianapolis, in the general field of bone and joint injuries.

DR. E. PAYNE PALMER, of Phoenix, has returned from attendance at the American College of Surgeons at Detroit. Dr. Palmer had the distinction of nominating for the presidency of the college, Dr. Franklin Martin of Chicago, from whose brain the idea of the college originated, but who has not, until now, ever been its president.

DR. F. C. JORDAN, of Phoenix, has recently returned from his postgraduate work in the east, and is located at 16 E. Monroe St., where he will practice the specialties of obstetrics and pediatrics. His special work was under Dr. Potter, of version fame, Dr. DeLee of Chicago, and with Dr. McKim Marriott for pediatrics.

DR. HARRY R. CARSON, of Phoenix, was recently stirred by memory of the dog sleds which carried the diphtheria antitoxin from Nome to the interior of Alaska, to rescue the children. Having a poliomyelitis case upon whom he desired to use human convalescent serum, he wished to secure this in a great rush from the coast. Being a lineal descendant of that man concerning whom it was said that he could buy from an Israelite at a discount and sell to a Scotchman at a profit, Dr. Carson managed to enlist the aid of the United States Government to deliver this serum in Phoenix by aeroplane. When these aviators descended upon the Arizona canal, north of Phoenix, they wondered why Dr. Carson had not requisitioned the navy department and a hydroplane. Anyhow, Dr. Carson secured his serum. The commendable feature of the incident was that in the newspaper accounts, which were quite prominent, attention was not attracted from the important part of the story by mention of the doctor's name and address. Dr. Carson saw to it that these were omitted.

DR. H. A. REESE, of Yuma, the full time health officer of Yuma County, has been busy inspecting the health conditions at the country schools of that county, and examining the school children. In this he has had the active aid of Mrs. Hansberger, the county school superintendent and Mrs. Robinson, the county school nurse.

DR. CLARA P. SEIPPEL WEBSTER, formerly of Chicago, who is now located in Tucson, has been appointed dean of women at the University of Arizona.

DR. FRED P. PERKINS, of Florence, Ariz., has been appointed physician for the University of Arizona, and has moved to Tucson.

DR. C. A. THOMAS, of Tucson, attended the convocation of the College of Surgeons, in Detroit, the first week in October.

DR. A. C. CARLSON, of Jerome, President-Elect of the Arizona State Medical Association, recently

visited Phoenix and Tucson, conferring with the other members of the Program Committee relative to the forthcoming meeting of the Association, to be held in Tucson next April.

DR. P. K. GRAYBILL, who has been located at Lake Pleasant, Ariz., in charge of the hospital department of the Beardsley Development Company, during the construction of a large irrigation dam on the Agua Fria, has moved into Phoenix, following the completion of the dam.

DR. B. F. JEFFERS, who was formerly located at Peoria, Ariz., and who left here for his old home in Kansas, proved to have been too thoroughly inoculated with Hassayampa water, and has returned to Arizona. He will be located in Glendale.

DR. H. B. LEHMBERG formerly of Los Angeles, has located at Casa Grande, Ariz., where he will engage in practice.

DEACONESS HOSPITAL, Phoenix, Ariz. July Staff Meeting

The Medical and Surgical Staff of the Arizona Deaconess Hospital met Monday, July 25, 1927, 8 p. m., at the hospital with fourteen members in attendance.

The chairman of the staff, Dr. J. W. Thomas, presided, and in the absence of the secretary, Dr. Hamer acted in this capacity. Dr. Watkins of the Records Committee, reported upon the deaths for June, as follows:

No. 1004; a man who died following an operation for cancer of the splenic flexure, is discussed in full later on in these records.

No. 1006; a male of 30 years, admitted June 7, and died June 14, following tracheotomy for peritonsillar abscesses and obstruction of the larynx. Case was discussed during the June staff meeting, and no further comment made here.

No. 1101; a male of 47, who entered hospital June 20 and died June 21, following operation for pelvic abscess, peritonitis, and intestinal obstruction. Case is up for discussion tonight, also.

No. 1088; a female child of 7 years, entered hospital June 4, and died the same day. Child had been sick about one week with indefinite symptoms. On the morning of June 4, she began vomiting and regurgitating water through the nose—a condition suggesting poliomyelitis. There were no neurological signs at this time. At 3:00 that day the child had paralysis of diaphragm, turned blue in color and started to expectorate frothy blood from the lungs. She was brought to the hospital, and died two hours later. Spinal fluid contained 64 cells, 75 per cent monos; no bacteria in culture or smear.

Autopsy: Marked passive hyperemia of all the abdominal and thoracic viscera. Thymus enlarged, and evidently had not undergone the normal degree of atrophy. Meningeal vessels were greatly dilated, showing marked hyperemia throughout. No definite gross changes were found in the brain or upper portion of the cord. Microscopic sections of the cervical portion of the cord showed small areas of inflammatory infiltration near the central canal and about the area of the anterior horn. Sections of the cord just below the medulla showed no additional changes. Sections through the medulla showed very diffuse round cell infiltration, most marked in the anterior portion. There are shown scattered polynuclear cells and a tendency toward the infiltrating cells to accumulate around the vessels. No inflammatory change seen on sections through the pons. Findings are believed to be quite conclusive for a diagnosis of poliomyelitis.

No. 1062; a female who entered hospital June 15, and died June 19, with a diagnosis of nephritis. No history obtained from patient other than that she

had been ill for several weeks, having severe pains in abdomen, was unable to take nourishments for some time, and had been having frequent involuntary defecations. No past history obtained.

Autopsy: Kidneys large, about seven times normal size. Kidney tissue reduced to about one-third normal but kidneys had many enormous cysts, making kidney fully seven times normal size. Large diverticulum from lower portion of ileum about the size of the index finger. Uterus and liver normal. Gall bladder contained a large number of stones.

Case 990; a male of 46 years of age, entered June 5 and expired June 11, with a diagnosis of pernicious anemia. The records do not contain sufficient evidence to justify a diagnosis of pernicious anemia in this case, although the blood picture is suggestive. No history attached to the records.

Case 978; presented by DR. GREER. This patient has had a lump in the right groin for several years. Seen in the office on several occasions. She has had a high blood pressure, in April the systolic was 176, in May it was 200 mm.

Four days before entrance to the hospital, June 2, the patient became ill with abdominal pain, nausea and vomiting, and complained of severe pain in the pit of the stomach, and was unable to take food or liquids. Patient was brought to Phoenix for medical attention, and that day became worse, with severe pain at the site of the hernia. Patient gives a history of unusually good health, until the past several years when the blood pressure has been high. Two years ago she had a "poisoning of the liver," and was ill for about ten days. She is the mother of three children, all normal pregnancies and deliveries. History was given by patient's daughter.

Physical examination: an old lady, very thin, and appears acutely ill. Skin dry and dark. Pupils react to light and accommodation. Nose, throat and ears negative. No cervical adenitis, no thyroid enlargement. Chest; percussion note slightly increased; broncho-vesicular breathing on auscultation over both fields; no moisture in chest. Heart normal in size; tones regular, rapid and with no increase in pulmonary second sound. Abdomen flat, scaphoid; no tenderness on palpation; in right groin, in region of Poupert's ligament, there is a small tumor which is not very tender to palpation. This tumor protrudes through the femoral ring. Extremities negative. Reflexes normal.

Patient was operated June 2, for strangulated right femoral hernia, probably with gut in the hernic sack. At operation a loop of ileum was found in hernial sac. Gut when released was very dark in color with a fibrous ring at one end of loop as if incarcerated at this point for a long period of time. Gut was patent. Hot towel was applied to discolored gut. There was considerable free fluid in pelvis.

Patient's urine on entrance was amber, slightly cloudy, acid, slight trace albumen, no sugar, trace acetone, no casts, occasional pus cell, no blood.

This patient continued to run a temperature, and on June 9, the incision was opened and a considerable amount of pus evacuated. Culturally the material showed streptococci and colon bacilli, the blood picture at that time was W. B. C. 20,200 with 90 per cent polys, and 10 per cent monos. Wound irrigated t. i. d. with chlorozene solution and two per cent mercurochrome, and patient continued to improve nicely.

DR. GREER, in discussing the source of the infection, spoke of the probable sources, the surgeon, the assistant, a slip in technic or the patient herself.

DR. HAMER assisted with the operation and observed no slip in the technic. A patient at this age with low resistance, and with this low incision, probably infected herself. Possibly this was a skin infection. The condition of the bowel, with necrotic fat, low body resistance, and the colon bacillus com-

ing through the affected bowel itself may have been the source. Dr. Hamer believes that the infection came from the patient herself.

DR. KENNEDY in discussing this case said that he had irrigated the wound t.i.d with Dakins and mercurochrome, and that the infection cleared within two weeks, but that there was no tendency to date for the wound to close, and that he had been using Balsam of Peru in the hope of stimulating granulation.

Dr. Greer asked Dr. Kennedy what was his idea of the source of this infection. Dr. Kennedy replied that he thought the patient infected herself, possibly by the colon bacillus migrating through the injured bowel wall.

DR. WATKINS said that the appendix is perforated bacteriologically before it is grossly; that this is probably true for any bowel before visible perforation, and was probably true in this case.

DR. GREER thought it would have been good judgment to have cultured the ascitic fluid at the time of operation.

Case 1004; by DR. C. B. PALMER. The patient, a white man of 44 years, and painter by trade, entered the hospital June 7, and expired June 10. The patient was taken sick June 6, with severe cramp in abdomen, and a lump appeared on the left side of the umbilicus; when seen nine hours later, there was a lump over the appendix region. For the past two years the patient had trouble with the abdomen, but never vomited. At times he would be nauseated, and could feel a lump in the abdomen, usually on the right side. The mass at times seemed to roll over to the right side in region of the appendix.

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Patient gives a negative family history for cancer or tuberculosis; was always well as a child, having only had measles. No other illnesses. In 1918 he had a severe attack of influenza, and was ill for about three weeks. He did not recover from this as rapidly as he should, but had no definite complications. Bowels always move with difficulty. On the day of entrance the bowels moved twice. Patient states that seven years ago he noticed blood in urine, but has noticed none since.

Examination: Somewhat emaciated man of good color. Head, eyes, ears and nose normal. Teeth bad, with extensive pyorrhea. Tongue coated. No adenopathies of neck. Chest normal. Pulse regular, heart sounds normal. Abdomen, severe cramps that come and go, (wife states they are like severe labor pains when most severe). Large mass as though cartilage or distended intestine could be seen over appendix region. This is due to peristaltic movement of intestines. Good deal of gurgling. Left side very soft. Right side quite rigid. Soft mass felt over appendix region. Kidneys apparently normal. Very little tenderness over gall bladder region. Profuse rigidity over right side of abdomen. Patient was sent into the hospital and operated as soon as preparations could be made. W. B. C. at that time was 12,100 with 80 per cent polys, temp. 97, pulse 82, respirations 19.

With a pre-operative diagnosis of obstruction of the bowels, the abdomen was opened by right rectus incision. Bowel found to be tied down to splenic flexure and a large angulating carcinoma of large intestine was found, which it was not possible to remove due to involvement of underlying tissue and its immobility. An anastomosis with Murphy button was performed between cecum and sigmoid. Considerable bowel contents was lost and flowed over operative field, due to extreme distension of large intestine, although suction machine was used to remove this. Closure was with one cigarette drain.

The patient died on the third day after operation. Soiling with onset of peritonitis probably was the cause of death. It would probably have been better to have made an artificial anus, but in this case, patient only had a short time to live, so that probably would have been inadvisable. This is a peculiar case in that it came on so suddenly. Although this man had intestinal trouble for two years, yet the acute onset came on suddenly. (Dr. Palmer exhibited the cancer specimen).

DR. GREER in his discussion felt that Dr. Palmer did the right thing even though the patient died of peritonitis. He asked if anyone could give a

classification of the type of cancer involving the bowel, (no response).

Case 1101; by DR. KENNEDY. This case was a male of 47 years, and owing to the critical condition of the patient, an inadequate history was obtained. He had felt badly for two weeks, with vague indefinite condition, and was out of town when taken sick, with a rectal abscess, and did not return to Phoenix until the night before death. Complained first of pain in the abdomen and his whole complaint centered there rather than in the region of the rectal abscess. Had been running a high fever. His pain was more generalized, similar to that of an obstruction, and when seen on the night of admission he refused operation. Physical examination was limited to abdomen. There was a bulging in the right inguinal region that represents a hernia which is easily reducible. There is a generalized and very marked abdominal rigidity; no definite tumor masses could be felt. In the region of the rectum there is a definite reddened area that represents an ischiorectal abscess.

Urine, amber color, cloudy, acid reaction, specific gravity 1.032, heavy trace of albumin, no sugar, positive diacetic acid, no acetone, many granulated casts, occasional pus cells, no red cells. Blood, hemoglobin 75, leucocytes 4100, polynuclears 70, mononuclears 30. Temperature on admission was 101.2 degrees, pulse 100, respiration 28. Patient was seen the next morning and operation again advised because of probable ileus of the bowels. Right rectus incision made and considerable slightly cloudy fluid escaped from the abdomen when opened. Fluid had a bad odor. There were heavy omental adhesions into the hernial sac, the omentum and intestines were adhered with fibrosis over head of cecum and appendix. No obstruction was found. A hard indurated area in the region of floor of pelvis could be palpated, the appendix was removed, the omental adhesions were clamped and cut from the hernial sac. A perineal abscess was incised and drained.

Post operative diagnosis, peritonitis, probably due from ischiorectal abscess. During the operation the patient was in profound shock and intravenous saline was given during the operation.

DR. KENNEDY, in his comments on the case, said that the patient refused operation when advised by Dr. Goodrich on the night of the patient's admission. There was definite evidence of a pelvic peritonitis when abdomen was opened and the fluid had a most peculiar cadaverish odor. When the abscess was opened there was but little pus but a great deal of necrotic fluid. This case simulated an obstruction; the appendix did not seem to be the cause of the peritonitis because it was small and had



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only small amount of fibrous exudate on its surface. The patient lived about three hours following operation, and died in extreme delirium. The cause of death was probably peritonitis and toxemia. No discussion further on this case.

Case 1186; by DR. SHELLEY.

This patient was admitted July 9, and discharged July 28, well. The patient is a shipping clerk, 32 years of age, male and married. His present illness began about 10:30 p. m. on July 8. At that time he ate some ice cream, watermelon and drank some beer. A little later he spoke of feeling very distended. About midnight that night he awoke having severe cramps in stomach. He felt very nauseated but did not vomit. Pain was continuous, very acute and cramping in character. He complained of pain in back also. Dr. Shelley visited the patient that night; repeated enemas were given with very poor results. Patient states that the bowels had moved twice that day. The morning of admission the patient began to vomit, vomitus appeared to be undigested food and dark brown fluid very bitter tasting. Condition was not relieved that morning so patient came to the hospital for further treatment.

Patient has always been a very healthy man. No history of any heart or lung trouble; no tuberculosis in the family; appetite always good. For some time past there has been trouble occasionally with gas, bowels very constipated, he has been in habit of taking cathartics about three times a week. The renal history is of no consequence.

The patient is married, wife in good health, no children. (History given by patient's wife).

Physical examination: A well nourished man who

appears to be one that has been well and healthy. Skin is clear, pupils react to light, heart and lungs normal; marked rigidity of abdomen, no difference in the two sides; appears as if the right lower quadrant is slightly more distended than the left on palpation; no particular point of tenderness was elicited either above the crest of the ileum or in the kidney region. Extremities negative. Urine, amber in color, slightly cloudy, acid, specific gravity 1.025, slight trace of albumin, no sugar, no acetone, no diacetic acid, no casts, occasional pus cells, 20 to 30 red blood cells. Blood, hemoglobin 85, R.B.C. 5,2210,000, W.B.C. 15,100, polynuclears 88, mononuclears 12. Temperature on admission was 99, pulse 88, respiration 25.

Operation was advised, with diagnosis of intestinal obstruction, probably ileus, cause unknown. There was found at operation, a post-cecal appendix held down with heavy adhesions, making a sharp kink in the ileum about three inches from the ileo-cecal valve; bowels were greatly distended; the jejunum was flat and collapsed.

DR. HAMER was asked to give an account of what was found and done at the operation. He said that the bowels from below the ileo-jejunal junction were greatly distended with gas, the small intestine above that point was very flat; the cecum in particular was greatly ballooned. An exploration of the bowels was made from one end to the other, and the only cause for this condition which could be found was at the appendix region. The appendix was removed after being freed from heavy adhesions and trocar inserted at the lower end of cecum in order to release the gas and fecal contents in

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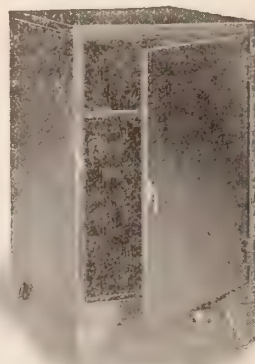
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the bowel. Closure was made with one cigarette drain. Patient's condition was good.

DR. GREER, in discussing this case, asked why the peculiar type of obstruction with distension of the ileum-cecum and large bowels. He thought that with such a condition the obstruction should have been in the sigmoid. This case to him did not appear to be one of intestinal obstruction.

DR. HAMER in reply said that the whole bowel was explored and nothing was found except from the kink in the ileum due to appendiceal adhesions. After the operation the patient made a very nice recovery and has had no further trouble.

Case 1099 by Dr. KENNEDY.

A man of 33 years, admitted to the hospital June 20 with the following history: Taken sick June 16, with pain in the epigastrium and took sal hepatic with only slight relief. Continued to have a dull ache in the upper abdomen but he continued to work all day, June 17. On Saturday morning, June 18, he felt so much worse that he consulted a doctor, and was given calomel but no relief. That afternoon he began vomiting, projectile and watery in type. Was given morphine that evening, but began vomiting again the following morning. The night of June 19, took large dose of castor oil with no results; enemas had been given but with only fair results. On Monday patient's vomiting contained fecal matter, the abdomen was very tender and pain more severe. That night he came a distance of about 170 miles by automobile to the hospital and was operated at once.

Physical examination on entrance: Man appeared to be extremely toxic and dehydrated, retching and vomiting of dark fecal like material, with board like rigidity in the abdomen; with evidence of generalized bowel distension; no tumor masses could be felt. Blood, hemoglobin, 85, leucocytes, 11,900, 83 per cent polynuclears. Urine, muddy in color, very cloudy, alkaline, specific gravity 1.039, trace of albumin, negative sugar, casts, pus cells and blood.

The patient was advised immediate operation: diagnosis ileus of the bowels. A great deal of clear fluid poured out of the abdomen when it was opened and a greatly distended ileum protruded with force into abdominal incision. This was an enormously distended ileum, as large as a distended colon, very red, injected, with fibrous deposits on it; only one half of the ileum was inflamed. This loop of ileum from the region of the left upper quadrant was found attached, with heavy adhesions, to the head of the cecum, making this portion into a complete twist. This was released by clamping both sides, and cutting the adhesions, holding it and giving the attached forceps two turns. The man's condition was very poor, pulse was weak, irregular, and skin was cyanotic; for that reason the incision was closed with through and through sutures. The patient was given saline during the operation.

The man's immediate post-operative condition was very grave; he was given 3500 c.c. of saline during the night, and the following morning appeared much better. From that time on the patient had fairly steady recovery, and left the hospital a few weeks later, apparently well.

DR. GREER in discussing this case asked Dr. Watkins about the use of the fluoroscope in diagnosing intestinal obstruction.

DR. WATKINS replied that the presence of obstruction had been ascertained a few times by noting dilated coils of bowels which could differentiate obstruction from peritonitis; on one instance he diagnosed the presence of intussusception and in one instance saved a patient from an operation by proving that an extensive bowel dilatation was not due to intestinal obstruction.

DR. LITTLE thought perhaps this case might

have been a case of obstruction at the hepatic flexure and cured by manipulation of the bowels.

DR. GREER did not think that it was anatomically possible to get a twist of the bowel at the hepatic flexure.

There was no further discussion on the case and meeting adjourned.

J. D. HAMER, M. D., Sec'y Protém.

DEACONESS HOSPITAL, Phoenix, Ariz. (September Staff Meeting)

The Medical and Surgical Staff of the Arizona Deaconess Hospital, met Monday evening, September 26, at the hospital with 25 in attendance. The following cases were reviewed:

Case 1391. Presented by DR. MCINTYRE. Two year old Mexican baby, admitted to the hospital in extremis. The spinal fluid count was 189, with 75 per cent lymphocytes; no bacteria on smears. The stool examination was negative. The baby had been unconscious for seven days. The head and neck were negative. Breathing was jerky and irregular; heart and lungs were normal; pulse, 94, irregular. Abdomen was markedly distended with gas. Both knee jerks were greatly exaggerated: pupils were apparently normal. Rectal temperature was 102. Diagnosis of **encephalitis** was made. Baby lived less than 24 hours after its admission to the hospital. Dr. Carson saw the baby in consultation with Dr. McIntyre, and concurred in the diagnosis of **encephalitis**. Dr. McIntyre said there was very little to report about the case as there had not been sufficient time to work it up adequately.

The secretary explained that the reason he had put this case on the program was, to provoke discussion as to whether the diagnosis might have been infantile paralysis. The spinal fluid count at least was suggestive of this.

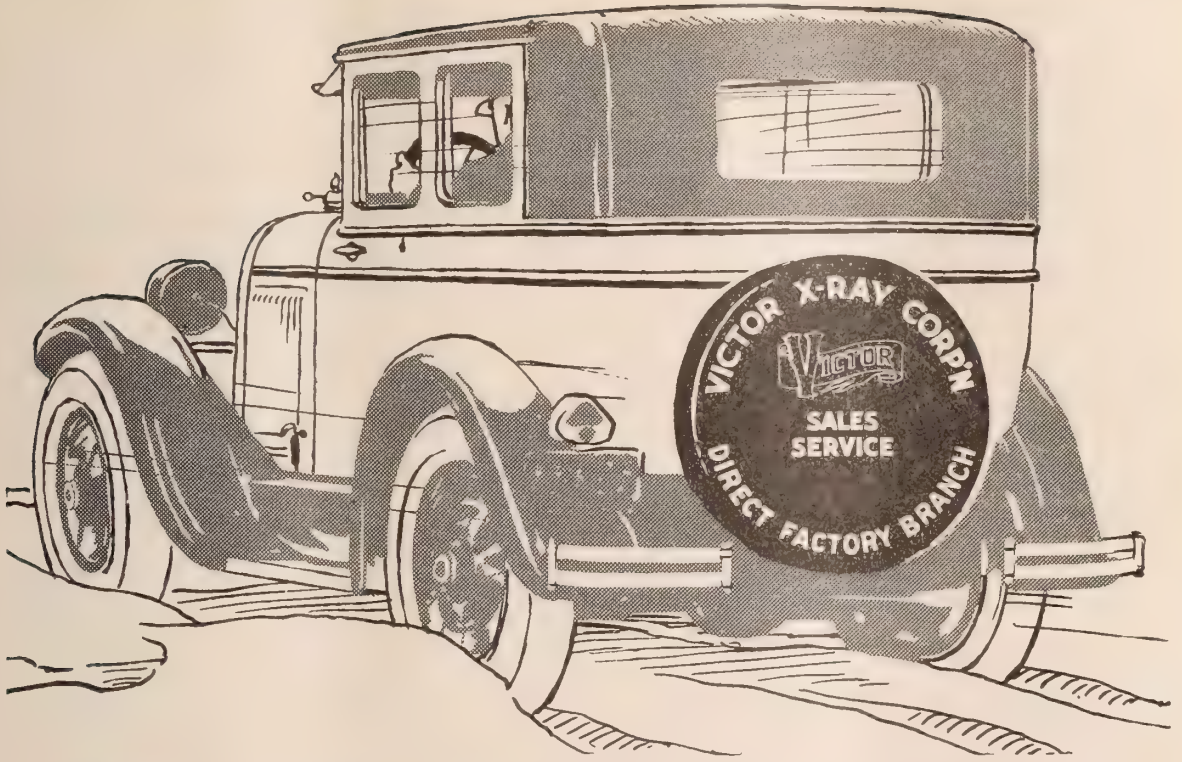
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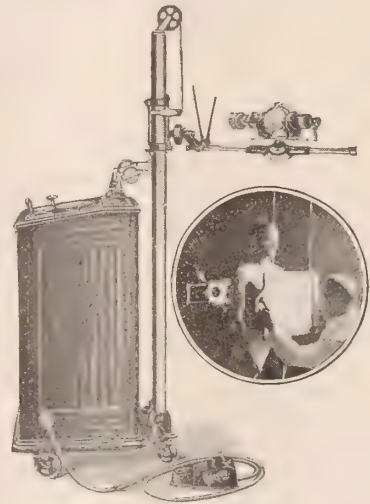
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Case 1267. Reported by DR. BAILEY. Male, 53 years of age, American. This patient was seen October 1, 1926, when he complained of severe pain in his left eye. This pain had been there two weeks. There was marked tension of left eye, and he was nearly blind in it. The retina could not be seen by the physician. There was a cataract present; the conjunctiva was reddened; the right eye was practically normal at that time. The patient returned to the doctor on July 15 of this year again with severe pain in left eye, which he had had for two days. He said it felt as though the eye would burst, and the room appeared to be full of smoke. The tension was 56; the conjunctiva was chemosed; the right eye was still good. His right arm and right leg were partially paralyzed; the tongue was paralyzed so that it interfered with speech. Diagnosis of acute exacerbation of chronic glaucoma was made, and the left eye was enucleated. Th pathological examination of the eye showed nodular thickening of the sclera, near the nerve head, with cellular infiltration. There was no typical arrangement of the cells, and no melanosis. Diagnosis was probably sarcoma. The urine had a very slight trace of albumin; the leucocyte count was 4800. The patient had normal course and was discharged from the hospital at the end of two weeks.

DR. FELCH, in discussing this case, said that this man had been paralyzed two years, and had been in the wheel chair all this time.

DR. DRANE said that, at one time during the convalescence, the patient developed an acute pain in the region of the liver, and he was called, but was unable to find the cause for the pain.

DR. MILLS, in discussing the case, said there was evidence that the tumor mass was a new growth, but he suggested that it might have been a gumma rather than a sarcoma. He said that a few months ago he had seen a man with a small dark melanotic growth in the canthus of one eye. This was removed and the man has remained well ever since.

DR. COUCH asked if the man had had syphilitic treatment. Dr. Felch replied: yes.

Case 1279. Reported by DR. BAILEY.

This was a male negro, 50 years of age. On July 18 he was unloading bricks, and dust blew into his left eye. He considered it of little importance and continued working until July 23. He reported at the doctor's office on the 25th with corneal opacities, chemosis of conjunctiva, and much pain. No foreign body was found. On the 27th there was pus in the anterior chamber. Wasserman reactions negative. Patient was sent to the hospital; iris was dilated with atropine and ice compresses were applied. The pus condition gradually cleared up and the man returned home on the 8th of August in good condition.

Case 1490.—anterior poliomyelitis,—was presented by DR. S. I. BLOOMHARDT. (See separate article this issue.)

Case 1419. Reported by DR. V. S. KENNEDY.

Male, 47 years of age, complained of sharp pain in the lower left quadrant of the abdomen and radiating to the umbilicus and later tended to radiate down the left leg. Seven years previous, the patient had an attack which was considered to be bowel obstruction, and has had three or four similar attacks since. On Monday, the 22nd, the patient had nausea with pains as described above. Enemas, castor oil, and salts were given but did not seem to move the bowels to any satisfactory degree. Gastro-intestinal x-ray was done and there was definite spasm of colon without obstruction. A few days later he had another attack of sharp pain in the lower left quadrant, and the patient was sent to the hospital, for study of urine and for sedatives.

The examination showed the head and neck negative, heart and lungs negative, the abdomen was soft and doughy, no spasm of recti and no masses; there was slight tenderness in lower left quadrant over the sigmoid and ureter region; reflexes normal; urine had many blood cells but was otherwise negative. The leucocytes were 12,750, 86 per cent polynuclears; subsequent examination of the urine showed slight trace of albumin. Patient made a speedy recovery and was discharged from the hospital on the third day. Diagnosis was left ureteral stone with secondary spasm of sigmoid. Dr. Kennedy said he had also seen another case recently who had a similar condition. At first it looked much like a bowel obstruction, but subsequently it gave every evidence of a kidney stone.

Vase 1388. Reported by DR. FRANKLIN.

This patient was in an auto wreck. The examination showed there were scalp wounds on the top of head and about the eye; there were multiple abrasions and contusions about the entire body. The chest was normal; the abdomen had loss of sensation below umbilicus. The legs were completely paralyzed. The x-ray disclosed fracture of cervical vertebra. Patient entered the hospital in delirious condition. Had high temperature all day and vomited a dark fluid; pulse very fast. Condition gradually grew worse, and he died the second day. Temperature was 105.6 axillary. Dr. Franklin remarked that the very high temperature was characteristic of lesions involving the medulla.

DR. WILKINSON in discussing the case asked for an explanation of the high temperature.

DR. FRANKLIN replied that it was due to the congestion of the medulla.

DR. KENNEDY said that he had seen a case in San Francisco in which there was a fractured ver-

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tebra. The patient was operated upon and the comminuted bone removed. He was apparently doing very well; the physician called for a catheter, and introduced it past the medulla; almost immediately they noticed the patient's skin was growing warmer and before long the temperature reached 108, and the patient died.

Case 1366. Presented by DR. DRANE.

Male, 64 years of age, who had extensive swelling of abdomen and legs. This began about a month ago; he had a great deal of nausea and vomiting and sometimes had difficulty in swallowing food. Past history was relatively unimportant. The urine had a very slight trace of albumin, Leucocytes 9,850. Examination showed that the head was normal. Pupils contracted and did not dilate readily; teeth were in bad shape; lungs were normal. The apex beat of the heart was at the nipple line; the abdomen was very tense; the anasarca was extreme and there was much edema in the back, up to the lower ribs. He had double hernia. He gradually developed extreme jaundice. On the 17th a mass was felt below the xyphoid cartilage in the region of the gall-bladder. The patient gradually grew worse and died. Diagnosis of cancer of liver was made.

The secretary said that he had placed this case upon the program for the purpose of calling attention to the importance of getting autopsies. The probabilities are that Dr. Drane's diagnosis is as satisfactory as any that could be advanced in the absence of the pathological findings. There are many of these cases that can be autopsied if an effort be made to get consent. The secretary made a further plea that we make an effort to raise the percentage of autopsies this winter.

Case 1328. Presented by DR. J. D. HAMMER. In February, 1927, the patient had several convulsions

and stated that he had never felt well since. He was exceedingly nervous, with coldness and tingling of extremities. He had a disability in walking. legs were weak and mumified. He was admitted to the hospital on August 4th with temperature of 99, and pulse 62, respiration 22. He was very weak and states that he could not move the left leg.

Examination shows a male 60 years of age, talkative, rational, lies in bed with no apparent pain. Hearing is good; vision impaired; pupils react sluggishly; right pupil is irregular; no strabismus or ptosis and no diplopia. Nose negative; teeth were not in good condition; tongue protruded to the left; throat and neck negative; lungs negative; heart was negative; blood pressure 142/76. Abdomen scaphoid; otherwise normal. There was a paresis of left arm and a wrist drop on left side. There was a diminution of sensory perception over distribution of radial and median nerves; reflexes more active on the right than the left. The left leg was weak, although not so markedly affected as the left arm. There was no decrease in sensation. Paresis was present also on left side of face, cheek and tongue, as well as the lips and the intercostal and abdominal muscles. Urine showed very slight trace of albumin; leucocytes 13,850. At the end of the third week the patient was allowed to be taken home by ambulance, although he did not appear to be in good condition. Diagnosis of apoplexy was made.

Case 1317. Presented by DR. SHELLEY.

Age 17, married, pregnant, last menstrual period Feb. 28th; about five months pregnant. Entered the hospital Aug. 3, 1927. Urinalysis at monthly intervals showed a slight trace of albumen and some times an occasional pus cell—three to four pus cells and sometimes none.

Her general condition was good, with the excep-

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tion of some vomiting during first months of pregnancy; appearance healthy. July 28 she became ill; had chills and fever ranging from near normal to 104 or 105. There was pain in the right side from the crest of the ilium upward and backward in the region of the right kidney; it radiated to the bladder region at times. There was tenderness over region of kidney. Urinalysis showed slight trace of albumen and hundreds of pus cells to the high dry field. There was much tympanitis which was always relieved by enemas. This condition continued with intervals of apparent improvement until the evening of Aug. 2, when she became worse and the conditions seemed to change.

In the meantime she had been given hexamethylin and the urine was kept acid. She was also given some anodyne but no morphine. On the evening of Aug. 2, he was called because she was much worse. Pain very severe, and nausea, with a toxic type of pulse and toxic in appearance. Abdomen more distended and point of greatest tenderness seemed to be over cecum. There was definite rigidity of abdominal muscles; more marked on right side. A white count was made which showed 6000 leucocytes, 88 per cent polys.

He then called Dr. Goodrich. After a very thorough examination he was convinced that she must have an acute appendix. He hesitated to operate on the theory that it was possible that the appendix had already ruptured. The question was then asked whether because of the extreme toxemia it would not give her a better chance if the abdomen was opened and drained rather than let her continue to absorb.

The physical examination revealed that the head was negative; no enlargement of the thyroid. Cardiac dullness normal, no murmurs. Pulse was rapid and weak. Lungs had a few fine crackling rales on left side in axillary line; abdomen was much distended with gas. Liver dullness was normal and it had no tenderness. Uterus enlarged from five months pregnancy. Very tender over cecum and backward to kidney region. Skin moist and anemic. Very cyanotic and the general condition was one of extreme toxemia, with rigidity of abdominal muscles.

We finally decided to operate, and she was taken to the hospital at 2 a. m., Aug. 3, and operation completed at 4 a. m. The appendix was found to be chronically inflamed and the right kidney was enlarged. No other pathology was found.

The family history is negative and the past history reveals only an attack of influenza some years ago, and some nausea during the first months of pregnancy.

Since leaving the hospital she has been slowly improving in strength, and has not had much pain. She still has some pain in the region of the abdominal scar but has just as much pain and of same character on left side which seems to be in the descending colon. She seems to think all the pain she has now is from gas in the bowels because when she is relieved of gas pain ceases. There is no pain nor tenderness over either kidney. The greater number of reports on her urine shows hundred of pus cells to macroscopic pus, and a trace of albumen.

Two weeks ago she had pain from uterine contractions. For a few hours it seemed as though there would be premature labor. A dose of morphine relieved her and since then there has been no return of this condition.

The conclusions made in this case is that she is suffering from a subacute pyelitis which has been responsible for most of her symptoms. It has probably benefited her to get rid of her chronically inflamed appendix.

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BOOK REVIEWS

Diagnosis and Treatment of Diseases of the Stomach with an Introduction to Practical Gastro-Enterology, by Martin E. Rehfuess, M. D., Assistant Professor of Medicine at Jefferson Medical College; with 519 illustrations; some in colors; Philadelphia and London; W. B. Saunders Company; 1927; \$12.00.

It is such a book as this which brings unusual joy to the reviewer. All books or nearly all books are good books; but some are superior to others. This is a superior one. Professor Rehfuess has prepared this book on Gastro-Enterology in a scientific manner. It is a monograph or at least it is monographic in style; for this reason it will not grow useless with age as do so many books. There are citations of literature on nearly every page. On many pages there are a number of citations.

The subject matter is presented step by step as the knowledge has been accumulated and points a way for further investigation. The author himself has done a tremendous amount of research work and this he has fitted in with the research work done by others. The author in his preface presents what is probably the key note of the work by saying: "My only hope is that this volume may justify its existence by stimulating further study in this fascinating subject."

The physician who is looking for a work upon gastro-enterology to give him long lists of prescriptions to try in this or that condition will probably be best satisfied with another book than this. But that physician who is looking for something to read that will give him stimulation of thought upon the problems of gastro-enterology will probably find no other book that will help him better than will this one.

Chapters have been contributed by Dr. John B. Deaver, Dr. Chevalier Jackson, Dr. Willis F. Manges, Dr. John T. Farrell, Jr., Dr. John A. Kolmer, Dr. J. Alexander Clarke, Dr. Louis H. Clerf, and Dr. Hobart A. Hare. The author has made an effort to have the book as complete as possible.

The reviewer would criticize but little. There are numerous cuts and pictures. It would seem that some of these would be more helpful if they had more description under them. On page 941 the seventh line from the top, the word effect is used where the author means affect. On page 1063 in the third from the last paragraph in number five is the sentence. "The total acidity is usually high in case of achlorhydria." This would seem to be an error of some sort. There are some very helpful tables in the last few pages of the book.

This is one of the great medical books of the year and deserves a place in the libraries of all physicians and surgeons.

O. H. B.

Clinical Case-Taking; Supplement to Methods in Medicine, by George R. Hermann, M. D., Ph. D., Assistant Professor of Medicine, Tulane University, New Orleans; the C. V. Mosby Company; St. Louis; 1927; \$1.50.

This book is particularly timely in this day when the doctors should be preparing themselves for the periodic physical examination. A busy physician is probably already away from the habit of going over the most of his patients in a careful systematic routine.

The book is an outline of those things which should be known as the child knows his ABC's and multiplication table, to be used in taking histories and in making physical and other examinations.

It occurs to the reviewer that a group of physicians could use this book as a text and again go

to school with one of their group as teacher and fit themselves for making the periodic health examination.

O. H. B.

Minor Surgery, by Arthur E. Hertzler, M. D., F. A. C. S., Chief Surgeon, Halstead Hospital; and Victor E. Chesky, A. B., M. D., F. A. C. S., Chief Resident Surgeon, Halstead Hospital; with 433 illustrations; The C. V. Mosby Company; 1927; \$10.00.

Hertzler's reputation as a writer is sufficient guarantee of value in any book prepared by him.

The term minor surgery is made to do duty, in this instance, with an unusual comprehensiveness. For example: in chapter XI, on diseases of the abdominal wall, he discusses, not only tumors, cutaneous tumors, lipomas, and desmoids, but sarcoma, hernias, umbilical hernias, hernia of the linea alba, inguinal hernia and femoral hernia. There are other chapters in which it would seem that major surgery, or even medicine in general, was being discussed rather than just minor surgery.

The subject is thoroughly presented and yet there is a conciseness and clarity about the language which makes it easy to read and understand. On page 85, in the middle of the last paragraph, a number of lines are jumbled so as to paralyze the sense.

The book would seem to be particularly useful and practical for the medical student—used as a text. It covers such a range of subjects, however, that it is also useful especially to the general practitioner as a reference work.

O. H. B.

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Emergencies of a General Practice, by the late Marthan Clark Morse, A. B., M. D., F. A. C. S., revised and rewritten by Amos Watson Colcord, M. D., Surgeon, Carnegie Steel Co.; Surgeon, Pennsylvania Railroad system; ex-President, Association of Railway Surgeons, Pennsylvania Lines East; ex-Chairman, Health Service Section, National Safety Council; member of Board of Directors, American Association Industrial Physicians and Surgeons; Second Edition; St. Louis; The C. V. Mosby Company; 1927; \$10.00.

Dr. Colcord has revised the 1918 issue of the late Dr. Morse's book and made some additions of his own. In other places he has omitted material that seemed to be out of date. The purpose of the book is to present the most useful and practical methods for all sorts of emergency work in general practice. The chapter on fracture work seems to be exceptionally full and practical. The book is written in concise, lucid style.

The reviewer finds little to criticize. Concerning the treatments of hemoptysis, the author advises that the patient be placed as flat as possible. We do not agree with this; the patient should be placed with the chest as high and with the legs as low, as possible so as to make a reservoir of the abdomen and legs for the blood. Likewise, in the treatment of apoplexy, the author fails to caution that the head should be kept as high as possible so as to promote anemia of the brain. He also perhaps does not emphasize sufficiently that the patient should be kept quiet for a sufficient length of time. The word isolation is repeatedly used in place of insolation. The index is far from complete. The author presents a great many splendid "tricks" which the average practitioner must needs refresh his mind about from time to time. This book will serve its purpose admirably.

O. H. B.

Diseases of the Digestive Organs, with Special Reference to Their Diagnosis and Treatment, by Charles D. Aaron, Sc. D., M. D., F. A. C. P.; Professor of Gastro-Enterology and Dietetics in the Detroit College of Medicine and Surgery; Professor of Gastro-Enterology in the Detroit Postgraduate School of Medicine; Consulting Gastro-Enterologist to Harper Hospital; Fourth Edition, thoroughly revised; illustrated with 174 engravings, 70 roentgenograms and 13 colored plates; Lea and Febiger: Philadelphia; 1927; \$11.00.

The fact that this book has passed through four editions in a comparatively few years bespeaks excellent merit for the work. The present edition is revised in the light of recent advancements in the field of gastro-enterology. The author has

covered the subject in almost an encyclopedic style so that it matters but little what one looks for, he is apt to find it here. It is easy to read.

The cuts are numerous and good. Some of them are a bit antique. Doctors with whiskers, nurses with constricted waists, and women with long hair give a tinge of erstwhile years, not reflected by the text.

There are 927 pages, 48 of which are occupied by the table of contents and preface and 53 by the index. The words and lines are spaced relatively narrow but not to such an extent as to make the reading difficult. The headings of the paragraphs and chapters are in bold type.

The subject of allergy is not discussed, at least so far as the reviewer is able to find. The relation of this subject to gastrointestinal disturbances or to pathologic states thereupon, would seem to warrant some mention of it in the text.

Clinicians will find this a valuable book. The reviewer has no hesitancy in recommending it.

O. H. B.

An Analysis of Secretarial Duties and Traits, by Dr. W. W. Charters and Miss Isadore B. Whitley of the Bureau of Retail Selling, University of Pittsburgh; Williams and Wilkins Company, Baltimore, Maryland; 1924; \$2.50.

Physicians and surgeons, probably more than other men, need carefully trained, thinking secretaries. A physician who is meditating over life and death problems cannot properly get down to sordid questions of making methodical records of three dollars, five dollars, twenty-five dollars, or even five hundred dollars as a routine. Neither can he meet the patients as they enter the waiting room, extending a welcome by a smile, a pleasant good morning or afternoon, or a jolly hello, or just the type of dignified greeting which says to the patient, "This is just the right place for you."

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This small book is the result of an investigation into those characteristics which are found, most commonly, in successful secretaries.

It will do well for each physician and surgeon and employer of secretaries generally to possess this book, to study it, and then to pass it along to the secretary. It can but be helpful if it is used.—O.H.B.

Physiology and Biochemistry in Modern Medicine, by J. J. R. MacLeod, M. B., LL.D. (Aberd.), D. Sc. (Tor.), F. R. S., Professor of Physiology in the University of Toronto, Toronto, Canada; formerly Professor of Physiology in the Western Reserve Uni-

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versity, Cleveland, Ohio; assisted by Roy G. Pearce, A. C. Redfield, N. B. Taylor, and J. M. D. Olmstead, and by others: fifth edition; with 291 illustrations, including 9 plates in colors; The C. V. Mosby Co., St. Louis, Mo.; \$11.00.

All that need be said for this author and his book, perhaps, is that the book has gone into five editions since its first appearance in 1918.

The reviewer marvels at the work involved in the preparation of the manuscript for such a work. There are 1054 pages, 103 chapters, 291 illustrations and many references to the literature. At the end of chapter 54, on shock, are 75 references to the literature.

The author has attempted to correlate the abstract facts of physiology with the practical side of medicine and he has succeeded. Chapters 51 and 52 discuss electrocardiography in such a way that medical students and doctors who are new to the subject may grasp the fundamentals. These are difficult to find elsewhere.

Part VIII of the book, with chapters 72 to 77 inclusive, deals with the excretion of urine.

Part IX., with chapters 78 to 97 inclusive, discusses metabolism. Part X, with chapters 98 to 103, presents the proven facts of endocrinology.

When one wishes to cull theory from fact, the unproven from the proven, MacLeod is a safe port in which to sail.

As we have said before all physicians should read at least one new book on basic sciences each year. This one is a good one for 1927.

Getting Well and Staying Well—A Book for Tuberculous Patients, Public Health Nurses, and Doctors; by John Potts, M. D., Fort Worth Texas; introduction by J. B. McKnight, M. D., Superintendent and Medical Director, Texas State Tuberculosis Sanatorium; The C. V. Mosby Co., St. Louis; 1927; \$2.00.

This type of book must be judged primarily by one criterion, namely: readability. The author writes in an easy, fascinating, comprehensible style. The doctor who picks up this book early in an idle evening will not be likely to lay it down until he has read it from cover to cover. The nurse interested in tuberculosis—and the patient, too—will read this book nearly as understandingly as can the physician, so well has the author done his task.

Those for whom the book is intended may read it with profit. Doctors doing tuberculosis work will find it a safe book to recommend to their tuberculous patients.

O. H. B.

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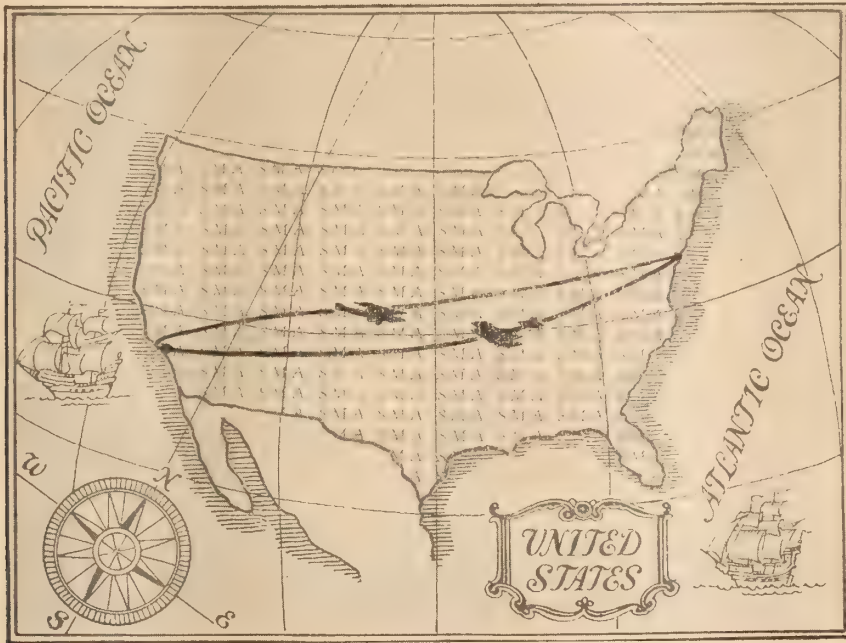
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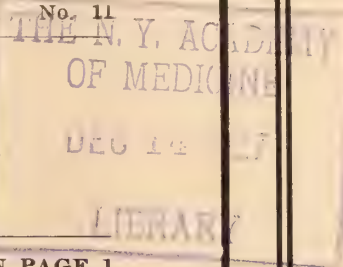
Volume XI

NOVEMBER, 1927

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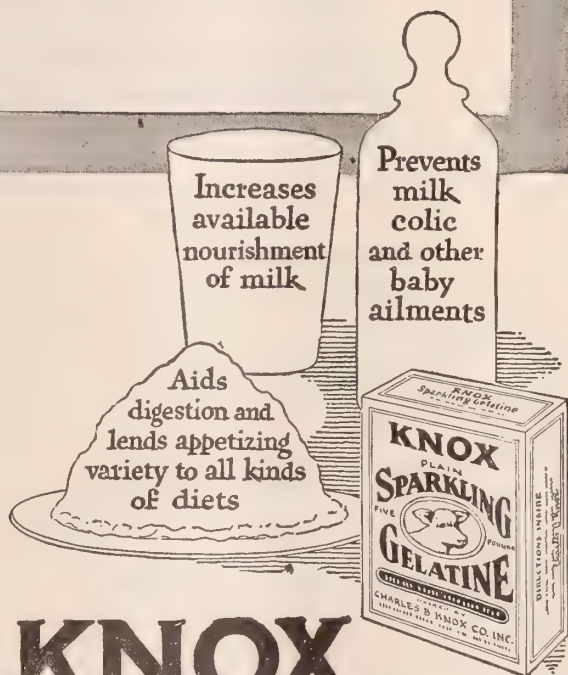
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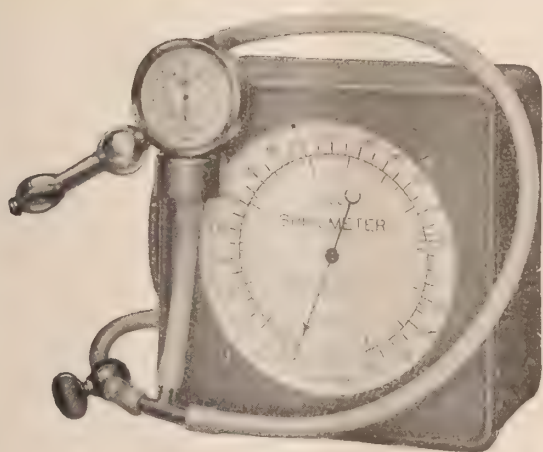
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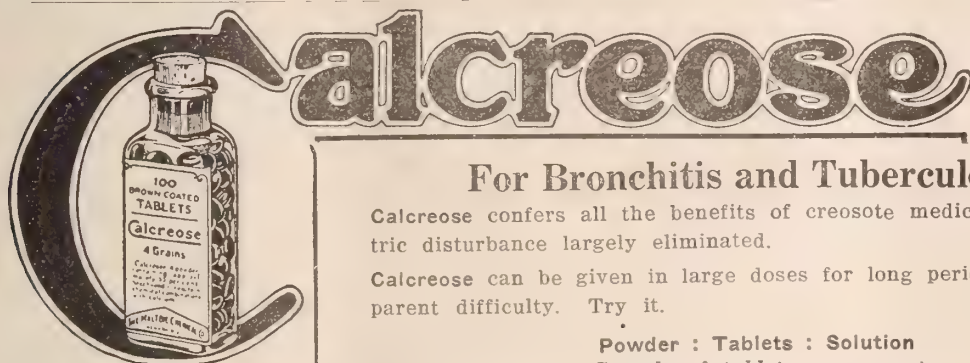
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THE DIAGNOSIS OF CERTAIN DIFFICULT CASES OF TUBERCULOSIS

F. M. POTTENGER, M. D.
Monrovia, Calif.

Read before the Annual Meeting of the Medical and Surgical Association of the Southwest, El Paso, Texas, November 2 to 5, 1927.

The average case of frank pulmonary tuberculosis may be diagnosed with comparative ease by those who are conversant with the well-established methods of examining the chest, but there are certain borderline cases which are difficult for the most experienced. Likewise, tuberculosis, at times, involves structures other than pulmonary and causes difficulty to the diagnostician.

There are three groups of patients which offer especial difficulty in diagnosis, and which I wish to consider at this time, viz., children with unhealed primary focus or in whom early reinoculation has taken place; adults with unstable nervous and psychical balance, and individuals who make a slow recovery from acute respiratory infections.

TUBERCULOSIS IN CHILDHOOD

Since tuberculous infection takes place in childhood, and since this infection of early years often fails to heal and so remains a potential and often an actual menace to the health and life of the child in providing a source whence reinoculations may take place, it is incumbent upon the medical profession to learn to recognize unhealed lesions and early metastases which arise from them, in order to avert serious disease.

It is not my purpose to discuss the lesions found in the various organs in childhood, such as those of bones, joints, meninges and visible lymphatic glands, but I wish rather to draw attention to that form of the disease which results from a failure of the primary pulmonary focus and its accompanying involvement of regional lymphatic glands to heal.

That tuberculosis both in children and in

adults is capable of remaining in an unhealed state without producing serious extensions and grave symptoms, is well recognized. During the unhealed state, however, extensions may occur and toxins may make their escape from the foci of disease and, depending upon the degree of stability of the nervous and psychical state of the patient, produce a variable picture of disturbed growth and development.

It is a very important thing to know when to suspect activity in such unhealed lesions. The fact of the presence of tuberculosis in the child may be determined by a positive reaction to one of the various tuberculin tests, the cutaneous and intradermal being especially suited to children. In respect to the tuberculin test, however, it must be remembered that there are certain conditions of stress, particularly those which accompany such acute diseases as the exanthemata and influenza, and many conditions of low physical vitality, which cause a disappearance of allergy for a time, and so may cause a negative reaction to tuberculin even though tuberculous infection be present.

A positive reaction to tuberculin may always be interpreted as showing that tuberculous infection is present, which is information of great value at times. Some go further and believe that a marked prompt reaction signifies activity, and with this I am inclined to agree. This, however, leaves us in doubt in many undernourished children who, because of a depressed allergy produced by their low physical state, might fail to react markedly, even though active tuberculosis were present.

Lesions also may be detected by the x-ray in those children in whom calcification of the primary focus has partly or completely taken place. It must be borne in mind, however, that not all tuberculosis can be visualized by the x-ray and, further, that the de-

gree of activity of those unhealed lesions in childhood can not be accurately judged by shadows shown on the plate.

A child who shows a strong reaction to tuberculin and who fails to grow and develop normally, who develops an unstable nervous system, shows a disinclination to play, has a disinterestedness in or repugnance to food, shows a loss in weight or at least fails to gain, is subject to colds which take the form of bronchitis, and shows an elevation of temperature, and in whom no other cause for these symptoms can be found, should be considered as probably suffering from an unhealed tuberculous focus, even though no localizing factors may be found. The probability of an active tuberculous process being present is the greater, the stronger and the more quickly the tuberculin reaction appears, and the younger the child; and, particularly, if the child has had a prolonged intimate association with open tuberculosis.

The active lesions in such cases, as a rule, are in the tracheo-bronchial lymphatic glands and not readily detected by the usual methods of examination. If, on the other hand, the unhealed lesion should be in the lung, it is more easily detected and more likely to be found by some of the more refined methods of physical examination applicable to that organ, such as will be discussed later in this paper.

A careful clinical history should be taken and a thorough physical examination with tuberculin test and x-ray should be made of all underdeveloped, nervous children, to determine whether or not there are symptoms or signs of tuberculous involvement. Unfortunately, lesions of the tracheo-bronchial glands, as a rule, show only symptoms due to toxemia and there is nothing characteristic in the toxic symptoms of tuberculosis to aid one in differentiating them from symptoms produced by other toxins. Reflex and local symptoms, as a rule, are absent, although recurrent attacks of bronchitis are not uncommon. The diagnosis in many of these cases must be based on a careful analysis of all data obtained and be presumptive rather than positive.

TUBERCULOSIS IN THE PHYSIOLOGICALLY UNSTABLE PATIENT

Many members of the human family possess an unstable or broken physiologic balance. Some are able to meet the ordinary demands that are made upon them and fail only to meet the unusual, while others are unable to accomplish ordinary tasks with efficiency. Such individuals may be well nourished or poorly nourished. The essential condition is disturbance in function. It

may be caused by an inability properly to adjust to pathologic stimuli, such as we find in those with unstable nerves, with endocrine imbalance, and with inherently unstable body cells; or a failure to adjust psychically to one's surroundings. To this group belong so-called neurasthenics and psychasthenics, and many suffering from such endocrine disturbances as hypo and hyperthyroidism of mild degree, hypo and hyperpituitarism, hypo and hypergonadism, and hypoadrenia.

These various groups show variation in the problems which they present for solution, but I am considering them together for clinical convenience. They all present more or less the same problems in diagnosis in the tuberculosis clinic, because of the fact that they all possess a very unstable physiologic balance.

The readiness with which constitutional or reflex symptoms on the part of any patient make their appearance, depends on the stability of his neuromuscular mechanism; in other words, on the amount of pathologic stimulation, either of physical or psychical origin, that his neurocellular mechanism is able to withstand without response. An individual with unstable equilibrium will, at times, withstand continuous and prolonged bombardment of his nerve centers and cells without departure from normal. This fact does not seem to be sufficiently considered in dealing with patients.

Physiologically, we speak of the point at which nerve reaction occurs as the threshold of response. While this threshold differs in different individuals and under different circumstances, it shows one particular characteristic under all circumstances, that is, when once lowered as it is by being broken over, or still further lowered by being frequently broken over, it may become so low that the patient shows symptoms on what might seem to be very slight cause.

When this natural protective inhibition is broken down, as it always is in the group of patients which we are now discussing, their equilibrium becomes unstable. Any stimulus which exerts a harmful effect on nerves, endocrines or the body cells themselves, such as the toxins of tuberculosis; or any emotional adjustment required of them, such as that to the fact of having a serious illness with its domestic, social and economic stresses, produces a new harmful stimulation which results in widespread neurocellular imbalance. Unfortunately the group of general symptoms found in tuberculosis, as readily can be seen, are much the same as those usually manifested by this group of

patients. This adds to the difficulty of diagnosis.

On account of the instability in the neurocellular mechanism, such patients, when suffering from tuberculosis, show symptoms very easily. Lesions which would not affect the more stable, produce definite symptoms in these. While the patient whose reactive balance is so delicate that it is overturned at the least provocation, deserves unusual attention, he usually receives less than average and is branded as a complainer or impostor, those coming in contact with him failing to appreciate that he shows symptoms with a minimum of pathologic stimulation.

When such patients harbor an active tuberculosis in their bodies they usually respond readily to the effect of the toxins and show some of the following toxic or general group of symptoms:

SYMPTOMS OF PULMONARY TUBERCULOSIS

GROUP I.

(General and Toxic)

<i>Caused by harmful stimulation of</i>	<i>Symptoms</i>
I. Nervous system in general.	1. Malaise
II. Endocrine system in general.	2. Lack of endurance
III. Body cells.	3. Loss of strength
	4. Nervous instability
	5. Diminished digestive activity
IV. Sympathetic nervous system.	6. Increased metabolic rate
Sympathetic endocrines, particularly adrenals and thyroid.	7. Loss of weight
	8. Increased pulse rate
	9. Night sweats
	10. Temperature (partially).

The fact that these patients show this same group of symptoms whether tuberculous or not, adds to the difficulty in diagnosis. They usually suffer from malaise, lack of endurance and nerve irritability; loss of appetite and weight, and rapidity of heart action affect them at recurring intervals; and even a rise of a few tenths in temperature may result from the increased metabolism often found in the nervous patient, together with an interference with heat elimination due to a slight constriction of the vasomotor control of his skin.

So, from this group of symptoms we can hardly expect to diagnose an early active tuberculosis in patients who normally possess this background of neurocellular instability.

If the lesion is in the tracheo-bronchial glands the only symptoms which are regu-

larly present will be those of this group and we are forced to make a diagnosis of suspected tuberculosis only, and keep the patient under surveillance until we can satisfy ourselves of the truth or error of our suspicion.

If the lesion is in the lung, on the other hand, even though it be slight, other symptoms come to our aid. Some of those belonging to the reflex group will manifest themselves as shown in table on next page.

Among the most common reflex symptoms to manifest themselves in the presence of active pulmonary tuberculosis, are those on the part of the larynx and the muscles of the shoulder girdle and diaphragm. Hoarseness and irritation of the throat with a tendency to clear the throat or cough, and the reflex in the muscles of the shoulder girdle and the diaphragm are commonly present. This muscle reflex shows both as an increased tension in the palpable muscles of the shoulder girdle and in a fixing of the hemithorax on the side of active disease, noted as a lessened motion. This latter, being due to the reflex shortening of the scaleni attached to the first and second ribs above and the crura and central tendon of the diaphragm below, belongs to the group of defense reactions of the body, and is constant in the presence of active disease.

When these symptoms are present in conjunction with some of those of Group I, the evidence is convincing of a pulmonary involvement.

I recognize the fact that limited motion of the thorax may be caused by pleural involvement acute or chronic, lessened elasticity of the pulmonary tissue, or a fixing of the mediastinal structures, as a result of mediastinitis. If any of these conditions are present to cause lessened motion, an acute process such as an active tuberculosis in the corresponding lung may still be suspected if increased tension is present in the neck muscles, particularly the sterno cleido mastoideus, scaleni, trapezius and levator anguli scapulae.

Rarely do we find any of the following localizing symptoms, those due to the tuberculous process *per se*, present in this group of cases as early as the symptoms of Groups I and II. This is evident from the fact that an unstable physiologic equilibrium is upset and shows general and reflex effects before the lesion becomes extensive, although it should be remembered, as an occasional exception, that a pleural involvement might be present very early.

SYMPTOMS OF PULMONARY TUBERCULOSIS

GROUP II.

(Reflex)

*Afferent nerves**Symptoms**Efferent nerves*Inflam-
ation
of lungAfferent
through
(vagus) pa-
rasympa-
theticsAfferent
through
sympa-
thetics

Hoarseness	Laryngeal nerves
Laryngeal irritation.....	Superior laryngeal nerve
Cough	Laryngeal, and nerves to all expiratory muscles with inhi- bition of nerves to inspiratory muscles.
Inhibition of heart.....	Motor fibres of cardiac vagus
Increased muscle tonus, and glandular secretion in gas- trointestinal canal.....	Motor fibres of gastric and in- testinal parasympathetics
Pylorospasm	Motor fibres of pyloric parasym- pathetics
Flushing of face.....	Sensory fibres of trigeminus
Spasm of sternocleidomastoideus and trapezius.....	Spinal accessorius
Degeneration and deviation of tongue from median line.....	Hypoglossus
Degeneration of facial muscles	Trigeminus and facialis
Flushing of ear.....	Third sensory cervical
Dilatation of pupil.....	Motor from Budge's Centre (lower cervical and upper dorsal)
Spasm of muscles of shoulder girdle and diaphragm.....	Cervical motor nerves, IInd to VIIIth
Lessened motion of chest-wall, partly due to muscle spasm as above.....	Cervical sensory nerves, IInd to VIIIth
Pain above 2nd rib and spine of scapula (superficial).....	Cervical motor nerves, particu- larly IIIrd, IVth and Vth
Pain in muscles of shoulder gir- dle (deep pain).....	Cervical sensory and motor, IInd to VIIIth.
Degeneration of skin and subcu- taneous tissue above 2nd rib anteriorly and spine of scapu- la posteriorly.....	Cervical sensory nerves, IIIrd, IVth and Vth
Degeneration of muscles of shoulder girdle.....	Cervical sensory and motor, IInd to VIIIth

SYMPTOMS OF PULMONARY TUBERCULOSIS

GROUP III

(Due to the Tuberculous Process, *per se*)

Spitting of blood.

Sputum (with or without tubercle bacilli).

Pleurisy (tuberculosis of the pleura)

Frequent and protracted colds (tuberculous bronchitis).

Active tuberculosis in this group of patients is very difficult to diagnose if we rely on clinical history, auscultation, percussion, sputum and x-ray examination; yet its recognition is made possible in most instances if a careful analysis of all available data is made.

We must always remember that they show symptoms with a lesser stimulation than those with more normal balance; also, that we can not place much reliance on the toxic or general group of symptoms alone; and further, that some of the reflex group is nearly always detectable if the lung parenchyma is involved, particularly those on the part of the larynx, the increased tension of the muscles of the shoulder girdle and lessened motion of the hemithorax in which the active disease is present. Frequent colds may be present when the hilum glands are enlarged and unhealed; pleurisy and blood-spitting may be occasionally present; but bacillary sputum is rarely found. The diagnosis, as a rule, must be based upon a combination of symptoms belonging to Group I and some of either Group II or III.

TUBERCULOSIS AND CONDITIONS WHICH FOLLOW ACUTE RESPIRATORY INFECTION

During the last few years a group of cases following acute respiratory diseases has appeared in the chest clinic, which have been very hard to differentiate from pulmonary tuberculosis. The difficulty has been exaggerated because reactivation of tuberculosis often follows these acute infections. Patients suffering from both conditions quite often show a slight rise in temperature, a persistent cough, more or less depression of their general strength, and, at times, recurrent attacks in which there is an increase in cough and temperature and expectoration, the latter sometimes containing blood. It is very difficult to determine in such instances whether we are dealing with tuberculosis or postinfluenzal infections.

In such cases we can not rely so much on clinical history, because of the fact that a tuberculous infection may be reactivated by

an acute respiratory infection. Nor can we rely on the toxic group of symptoms, because they may be identical in both instances. In the reflex group, however, I would like especially to emphasize the fact that the reflexes from the lung are not so general in the acute respiratory infections, where the lesion is more definitely confined to the bronchi, as they are in pulmonary tuberculosis, where we have parenchymal inflammation. To be sure, the reflex on the part of the larynx, the hoarseness and irritation and the tendency to cough, is present in both diseases, but the reflex in the muscles which leads to increased tension of those of the shoulder girdle and a fixing of the side rarely is found in the non-tuberculous diseases. On the contrary, it is practically always found in active pulmonary tuberculosis, because the latter produces a more widespread parenchymal involvement.

Should tubercle bacilli be present, there should be no difficulty in making the diagnosis. In order to avoid wrong information, however, the sputum in these doubtful cases should be collected for twenty-four, forty-eight, or even seventy-two hours, and be examined by some of the methods which require concentration of the bacilli.

On physical examination of these two types of infection, there is usually some difference in the rales that are present, and yet this can not always be relied upon, because we may find both conditions present without rales, and, further, we may find no other readily detectable changes by the stethoscope. The x-ray may or may not show a difference in shadows. However, if, upon the injection of tuberculin, rales should be detected by the stethoscope, or shadows indicative of a focal allergic reaction should appear on the plate, then our diagnosis of tuberculosis is definite.

These pulmonary conditions are among our most difficult to differentiate, but, with careful observation and not too great hurry, an exact diagnosis may usually be made. It seems to me that the clearest conception of tuberculosis is obtained by analyzing the cause of the signs and symptoms which are found on examination. The analysis of symptoms is also of the greatest aid in differential diagnosis. The constancy of the reflex muscle tension in the presence of pulmonary tuberculosis commends it as one of our most dependable symptoms, and, when we consider it along with symptoms belonging to the other groups, we have a very dependable basis for diagnosis, even in these borderline cases.

TUBERCULOSIS CLINIC

DR. F. M. POTTENGER,
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The first two cases were used to study the significance of the history and symptoms, from the diagnostic standpoint. The other four cases were used to demonstrate physical findings, with some discussion as to treatment.

CASE I.

Male, age about 35 years. Never sick until about the age of 13; then developed cough with profuse expectoration. Thought at the time to be tuberculosis, though sputum was negative. Chills and fever from the age of 13 on; lived in a malarial country. At the age of 17, he had what the doctors thought was abscess of lung. He had pain in the right lung which came on suddenly; in about a week the abscess burst with lots of sputum. He had fever for quite a while and lost some weight. He would cough up purulent mucus, then white foam. Finally this disappeared. He had typhoid fever at the age of 19. He had lobar pneumonia at 22, and a second attack of pneumonia at 30. Was sick only a week or ten days. Has never been well since last attack. When he works hard he develops fever. He is now ten pounds below normal weight. Has periodic spells of temperature with increased sputum, which is negative for tubercle bacilli.

This case is very interesting. The patient says he has coughed since childhood and thinks he inhaled a piece of grass when about twelve years of age. I am quite sure from his history that he is mistaken about this, because he would have had trouble immediately or within a very short time, and he did not cough until about a year later. He states that there was considerable odor to the sputum at the time of the lung abscess. Apparently the abscess discharged and healed, and is not the cause of his present symptoms. He states that if he stays in bed for a week his fever will be gone; then he can go back to work for two or three days and he has fever again. His cough is undoubtedly of the bronchiectatic type; it began about the age of thirteen, apparently starting with an acute cold or an acute infection. A cough which persists for that length of time is nearly always bronchiectatic. One cannot say that this condition may not become tuberculous, but I would say that it is, primarily, a non-tuberculous process. You can nearly always diagnose bronchiectasis by studying the history. It is apt to start from whooping cough, pneumonia or influenza—pneumonia or whooping cough particularly—with the cough persisting over a long period of time.

Ques. How do you treat bronchiectasis?

Ans. It is a most difficult thing to treat. A case of this type I treat much the same

as tuberculosis. Emptying the bronchi twice daily is of the utmost importance, using a tilted table or the edge of the bed. By keeping the bronchi well emptied you take away a good deal of the tendency for the bronchiectatic condition to increase. I give these patients iodine over long periods of time.

Ques. How about compression?

Ans. It is not much good. This is not the type for compression. When such a condition is distinctly one-sided, it can be operated upon, and chest surgery has been fairly successful in some of these cases. Graham has devised a technic in which he makes a window posteriorly, brings the visceral pleura up and lets it become adherent; then he goes in and cauterizes out the diseased area. He has been fairly successful, but if the condition is double you cannot carry that out. These patients ought to be given a trial on intensive treatment, by emptying the bronchi twice daily, improvement of the general condition and building up their resistance so they do not take cold. Vaccine will help in many cases, but we must give the vaccine over long periods of time. I prefer autogenous vaccine. The injection of lipiodol has resulted in a good deal of disappointment, but a few cases have been helped very materially, so that it should be tried. Iodine in some form over long periods of time I think is the best remedy.

CASE II.

Male, age about 35. Had pneumonia in November, 1918, and was in bed until January first, with temperature and cough all the time, but very little sputum. Normal weight was 144; weight in February after getting up was 118. Doctor said he had abscess of the lung. Reached normal weight in three months; went back to work and went to pieces, losing weight and coughing a great deal. Went to railroad hospital where they said he had tuberculosis. He came west. Was running temperature to 99.2, with quite a bit of sputum. Sputum was not examined until he came west, when tubercle bacilli were found. Has had hemorrhages of three or four ounces. Not much pleurisy. At the present time he has a little fever, possibly to 98.8 if he stays in bed. If he exercises, pulse and temperature go up. Appetite is good.

It seems strange to me that so many tuberculous patients come under my observation with the statement that they have never had sputum examined. I think the doctors in the east are not quite so keen on this as the doctors in the west. A slow recovery from pneumonia or influenza always makes us suspicious of tuberculosis. Lung abscess behaves in a different way, as in Case I. This finding of tuberculosis following pneumonia or a similar infection, can only be explained on the ground that the tubercle bacilli are dormant in these lungs, and are stirred up by such an infection as

influenza or pneumonia when the patient's resistance is lowered. When these acute infections come on, the immunity mechanism is interfered with for the time being, and the conditions are the same as they are when the bacilli are sowed on virgin soil,—ripe for the spreading of the disease. In this case, the history of pneumonia, then a slow recovery, and a residual condition which does not clear, points to a tuberculous process. The positive sputum, finally, definitely proved the diagnosis.

This patient's temperature is normal when he stays in bed; when he exercises, the pulse and temperature go up. One of the big problems in dealing with such cases is how to get them out of invalidism. Such patients need to be guided very carefully, and sometimes I disregard the general rule and put them on exercise. We hear the surgeons talk about technic, but there is just as much technic required in medicine as in surgery, but we do not seem to realize it. I do not tell such patients to go and walk so many minutes; I like the idea of distance, rather than time, as it is more accurate. If the patient has been an invalid for a long time, he cannot go from bed right back to work, or from no exercise at all to any kind of work. I start getting him up, say ten minutes a day; if everything goes right this is increased very gradually, until he is sitting up three hours a day. Then let him play around a few days before starting him walking. The first day he walks, he will go perhaps a hundred feet, and the distance is gradually increased. Do not let him overdo or he will fail; if he will keep within bounds he will succeed. If they will build up and get exercise slowly, they will eventually come out all right.

Contrary to general belief, tuberculosis does not always begin in the apices. It can be in any part of the lung; very often I find it in the second interspace and have seen a great many cases of tuberculosis in the lower lobes. These patients have their own x-rays on the outside of their chests, if the doctor knows how to interpret them. In this Case II, you would know that he has tuberculosis and that he has had the disease for many years, because of the amount of muscle degeneration, while Case I does not have degeneration, though his disease is of longer standing, and you would say that he is probably non-tuberculous.

CASE III.

Female, age about 25. Always in good health until August, 1926. Started with bad cold in throat, then in the head. Took treatment from nose and throat specialist. Was running a high temperature, but kept on working. Had no loss of weight, did not feel normal, did not sleep well, was nervous and

general health declined. Cold persisted until about first of December, when she had a hemorrhage. Following this, cough continued, and sputum was positive for tubercle bacilli. Continued work until December 18th, when she went to bed.

This brief history illustrates the type of case in which the early symptoms were predominantly general and toxic. With few or no local signs, she had the general symptoms of toxemia, loss of strength, nervousness and general decline. The hemorrhage finally pointed the way to correct diagnosis.

In the observation of this patient, we recall that she is now above her normal weight, but although she has filled out quite well, there is still muscle degeneration on both sides. There is lessened motion of the left base as compared with the right. This is due to a reflex which comes from the upper five or six thoracic nerves along with the phrenic. If you have inflammation here, whether at the top or the bottom, impulses go back to the cord, and in the cord are distributed to the phrenic nerve that passes to the crura of the diaphragm in the costal portion. This stimulation causes contraction of the diaphragm and of the scaleni and sternomastoid muscles and you have fixation above and below. That will come early, before there has been pleurisy or involvement that will reduce the elasticity of the lung. That lessened motion is one of the important things to determine in examination of the chest. If you find lessened motion, feel the muscle above and see if there is increased tension. In testing muscle tension, be sure you have the room warm, as a cold room (as this one is) will cause the muscles to become tense. While this patient has filled out, we can see that there is loss of subcutaneous tissue on the right side above the second rib. There is degeneration on the left side also and it apparently goes a little bit lower. As she is above normal weight, it is easily seen that she has involvement of both lungs. Some of these cases will fill out entirely, but very rarely. There is lessened motion on the right side in front; that may be due to changes in the lung tissue itself rather than to reflex at this time. In palpating the muscles, palpate very lightly. In this case, the lesions have not entirely healed, because there is still muscle tension; the muscle comes back against the finger like the string of a bow. The same thing is present on the left, though the right shows more degeneration. Text books tell you that the right sided muscles are larger; that is not true except in people who use the arms a great deal. The levator anguli scapulae and the rhombodei are nearly always larger on the right, so that you will feel a fullness on

the right which is not necessarily abnormal. That is due to the fact that these muscles are in better tone, from use of the right arm. In this patient, there is some loss of tone in these muscles, probably due to degeneration.

The physical examination would indicate an old lesion because of the degenerations mentioned, and it is not yet healed because of the muscle tension. There is not much density in the lung, although there is some.

X-ray shows infiltration at the right apex and into the first and second interspaces on the right, with rather marked hilus densities. On the left there is slight degree of infiltration into the upper lobe, with pleural density over the apex.

CASE IV.

Young man, age about 30. Always in good health until fall of 1918, when he had a rather severe attack of influenza, but thinks he made a complete recovery. He had a severe cold in 1924 from which he made slow recovery. In August, 1925, he had a severe attack of left sided pleurisy, with night sweats, and suffered a general break-down in health from which he has not recovered. Developed cough at same time as pleurisy occurred. Diagnosis of tuberculosis confirmed by x-ray and sputum. Some time ago diagnosis of tuberculous laryngitis was made, and he has not been doing so well since. Has spent some time in sanitarium.

X-ray examination shows infiltration densities into the apices, with a very fine mottling throughout the upper lung field of each side. Fine fibrous striation and beading, with marked fibrous change about each lung hilum.

This patient's having lost weight makes some difference in the examination, as you cannot tell how much of the muscle change is due to loss of weight and how much to atrophy, but even with the loss of weight in mind, we can see that there has been a marked degeneration of the subcutaneous tissue. There is much difference in the breathing, the right base moving considerably less than the left. When you compare the physical examination and the x-ray findings, do not try to make them agree, because they will not do it. Neither the x-ray nor the physical examination will find everything. Many men think that the x-ray film, because it visualizes, will show everything, but it does not. Have recently been doing some interesting work, which was original with me, though I find that it has been done long before. The usual x-ray of the chest is taken postero-anteriorly (front to the film), and I noticed that the discrepancies between x-ray findings and physical findings were usually on the posterior part of the chest. So I began to turn

the patients around and have them rayed antero-posteriorly (back to the film). I found that the antero-posterior film, in those cases where most of the pathology was in the back, would show very differently from the postero-anterior film on the same patient. I found out, afterwards, that this fact had been pointed out in 1910, when some investigator took some tuberculous tissue, pasted it on the chest, and it would not show in the film, unless it was turned next to the film. If we want accuracy, it is better to take films both ways. In this patient's chest, you can feel a difference in the resistance; over the upper part there is more than below. While the x-ray does not indicate particular involvement of the pleura, there is some thickening that is quite characteristic. I would like to show an interesting thing. If you turn the patient's head to one side, as very many men do, the neck muscles pull up on the first and second ribs of the other side and fix them, so that you will get a higher percussion note on the side away from which the head is turned. That is what happens, many times, when one doctor finds dullness at one apex and another doctor finds just as much dullness at the other apex. There is only one correct way to percuss and that is to have the head directly forward. The same thing would happen behind, if the head were turned, but there is not the inclination to turn the head to the side, when examining behind. (Demonstrates difference in percussion note with the head turned and with it directly forward, showing how the pitch rises as the head is turned.)

CASE V.

Female, age 31 years. Childhood history negative until age of 12, when she had measles, mumps and whooping cough; pneumonia at 21. Before she recovered from this, she got inflammatory rheumatism and has never fully regained her strength. Family history negative. In January, 1921, small tumorous mass found in left supraclavicular region. She had recently been vaccinated, and thought it was some infection from vaccination. Grew gradually worse until March or April of the same year. Then she began to experience a sense of "clutching," tender to touch. Thought of goiter and consulted doctor who gave local applications without result. Nothing more done until August, 1921. Temperature usually went up a little in afternoon. About this time more glands became involved on both sides of neck, with a sense of pressure, also tenderness to pressure. In September, 1921, went to hospital for x-ray picture, and diagnosis of Hodgkin's disease was made. In October, x-ray treatments were commenced and she got some better. Biopsy was done and diagnosis confirmed pathologically. All laboratory tests negative. Size of glands decreased. Patient continued x-ray treatment at varying intervals for a period of four years. In spring of 1925 she developed sudden severe pain in right thigh radiating downward, similar to sciatic neuritis; pain

was sudden and very severe. It was also present in small of back; usually occurred in the night and lasted 3 to 5 hours. Temperature up very markedly, and usually chill before temperature. Attacks extremely irregular. Pain would subside when she began to sweat. X-ray treatments have apparently helped.

If there is anybody in the audience who knows anything about Hodgkin's disease, I wish he would take the stand. There is very little known about it. Several years ago, Yates of Milwaukee discovered a bacillus which he thought was the cause of Hodgkin's disease, but this has not been generally accepted. There may be a much closer relationship between Hodgkin's disease and tuberculosis than we now know. There is much about bacteria that we do not yet know. Contrary to former belief, streptococci do not always appear in chains. The tubercle bacillus is not always a long rod. Many years ago Spengler called attention to the "splitter" forms of tubercle bacilli, and there is no doubt that this bacillus takes many forms and sometimes a form that we are not able to stain. We know that the tubercle bacillus goes through a process of growth and that the younger forms are not as stainable as the older ones. So, there may be a closer relationship between Hodgkin's and tuberculosis than we think.

This patient has a general glandular involvement. On inquiry we find that the x-ray treatments were 180 k. v. for thirty minutes over each area, under which she improved. We can tell very quickly whether the condition in her chest is an inflammatory one or not; if it is inflammatory, we will have reactions in the muscles. We find a rather interesting thing in this chest. There is degeneration of the subcutaneous tissue above the second rib in the left, and there may be a little on the right also. That would indicate an inflammatory process which involves probably considerable lung tissue. As you go over the chest you can outline this mass that is shown on the x-ray film. It is not as dense as might be thought; the glands are not very large. There is no glandular enlargement of consequence at this time. The patient states that she feels fine, works about eight hours a day right along; has no pain in the chest at the present time. There is muscle tension present on both sides but not high grade like a tuberculous process.

Ques. Would the pleural reaction which sometimes follows radiation of the chest

act upon the muscles like an inflammatory process? Ans. No.

Ques. What is your opinion of tuberculin therapy?

Ans. I would use tuberculin on this case, on a chance. I have used tuberculin since 1896. It is never going to be popular because of the fact that it requires that very close watch be kept on the patient and adds greatly to the burden of treatment. But it is scientifically correct in the treatment of tuberculosis.

CASE VI.

Boy, age 13. Chief complaint, loss of weight and strength. No cough. Enlargement of a gland in right side of neck. Usual diseases of childhood. Typhoid fever latter part of 1918. Influenza and pneumonia in 1925; sick about five weeks. Similar attacks in 1926, when he was sick about four weeks. After the typhoid in 1918, he was diagnosed tuberculous and advised to go on a ranch and regain his strength. He fell and broke his nose latter part of 1924. Tonsils removed in 1923. Teacher told him he was underweight.

With regard to the height and weight charts used by the schools; standards are useful only in a general way. How are you going to make a small boy, who has a small father, small mother and small grand-parents, fit a certain rule? And how are you going to have a large, rotund person do the same thing? You cannot do it.

Examination of this boy shows glandular involvement. The glands in the neck have been incised; the doctor says he got pus. Removal of one gland which is tuberculous does not do the patient much good. I would have this boy eat well, run around without his clothes on and get plenty of sun baths, sleep in the open, and live the life of a normal healthy boy. Let him go to school and be normal. Keep him out of competitive sports and too violent exercise, for a time at least. Treat these cases intelligently. There is no reason why this boy should not develop normally and grow into a strong man. We know this type of infection takes place in from forty to sixty per cent of people before they reach this boy's age. We know they heal completely without symptoms in about sixty per cent of the cases. We know in about forty per cent they do not heal completely and produce some slight symptoms, usually a slight toxemia. All you need to do in this case is build up the boy's resistance, have him sleep in the open, eat good food, take cold baths so he will resist colds, take sun baths, and not overdo during the period when there is suspicion of this condition. But DO NOT make an invalid out of him.

LOCALIZATION OF FOREIGN BODIES IN OR ABOUT THE EYE

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Whenever an eye is injured by a foreign body, it immediately becomes of vital importance to determine (1) whether the globe was penetrated by the body and (2) whether the foreign body remained within the globe or passed through it. The proper management of such injuries depends upon the early and accurate determination of these points. Sometimes examination with the ophthalmoscope will give the necessary information, but usually a penetrating wound of the globe will so cloud the transparent fluids and structures of the eye that ophthalmoscopic examination is not satisfactory. Therefore, following the discovery of the x-ray, the advantages of determining the presence of a foreign body by radiography, and its accurate localization, were quickly recognized, and the work in this field was one of the earliest developments in clinical radiology.

The first recorded localization of a foreign body in the eye is said to have been the one made by Dr. Francis H. Williams and Dr. Charles H. Williams, of Boston, on June 5, 1896, reported by Dr. Charles H. Williams, in the Boston Medical and Surgical Journal of August 13, 1896, the x-ray work being done at the Rogers Laboratory of Physics of the Massachusetts Institute of Technology.

Dr. W. M. Sweet, of Philadelphia, reported localization by his method in the Archives of Ophthalmology of November 27, 1898. Dr. Charles F. Bowen, of Columbus, Ohio, also reported his method of localization about the same time.

Since the perfection of localization technic, ophthalmologists have been placed in a position of decided advantage in handling foreign body injuries of the eye. The ability to determine definitely the location of the foreign body, its size, shape and, within limits, its nature, permits the proper treatment of such injuries to be given early and has conserved the vision of many eyes which would, otherwise, have been lost.

Among the writers on this subject, from the radiologic standpoint, during recent years, may be mentioned the following:

John S. Derr, in the American Journal of

Roentgenology, August, 1916, emphasized the value of x-ray in determining the presence of foreign bodies and the ability to recognize very small foreign bodies. He described the old Sweet apparatus and reported sixteen cases of localization.

James G. Van Zwaluwenburg, in the American Journal of Roentgenology, for October, 1917, emphasized the necessity of fixation of the head and globe, and discussed various sources of error and their avoidance.

Ancil Martin and W. W. Watkins, in Southwestern Medicine, for November, 1919, discussed the value of radiography, and the varying density of different substances encountered as foreign bodies, reporting twelve selected cases.

M. B. Titterington, in the Journal of Radiology, for January, 1920, described in detail methods with the Sweet-Bowen localizer, and also with the improved Sweet localizer. Emphasis was laid on the necessity for complete fixation of the globe. Films should be checked against each other, and if there is a variation, a new set should be made.

James M. Patton, in the Journal of the American Medical Association, Sept. 23, 1922, writing on the "Localization and Extraction of Intra-ocular Foreign Bodies," emphasized that in every eye injury the possibility of intra-ocular foreign body should be considered. The eye seems to tolerate copper or brass more kindly than other non-magnetic substances. The x-ray is the most valuable aid in diagnosing and locating foreign bodies in the eye.

The technic of localization with the Sweet localizer has been described by several writers, especially by Titterington, and will not be repeated here. We wish to emphasize, along with the writers mentioned, the necessity for scrupulous exactness in technic. In many cases, however, exact technic becomes impossible on account of the nature of the injury. When both eyes are injured and photophobia is present, it may be impossible to secure fixation of vision on the mirror. Even when only one eye is injured, fixation of vision with the good eye may not prevent nystagmus or involuntary movement in the injured eye. When fluid has been lost from the eye, the cornea may collapse or the globe shrink so that the charted measurements become inaccurate for the eye under examination. The globe may be displaced by hemorrhage into the orbit, by edema around the eye, or bony injuries to the orbit, so that the charted localizations are uncertain.

These and many other factors make lo-

calization difficult and uncertain in some cases. In spite of these sources of error, however, localization by the Sweet apparatus is remarkably accurate and can usually be taken as a reliable guide in handling foreign bodies in or about the eye. Even in those cases where there are multiple small foreign bodies, as after a blast or other explosion into the face, usually the particles within the globe area can be selected and

suspected foreign body, made by us from Jan. 1, 1918, to July 1, 1926, we have localized foreign bodies within or about the eye in 146 patients.

The large number of cases giving negative results illustrate how important this examination is regarded by the ophthalmologists for whom we work. The eye specialists of Arizona who handle industrial work have every eye injury radiographed, there being about three reported negative as to

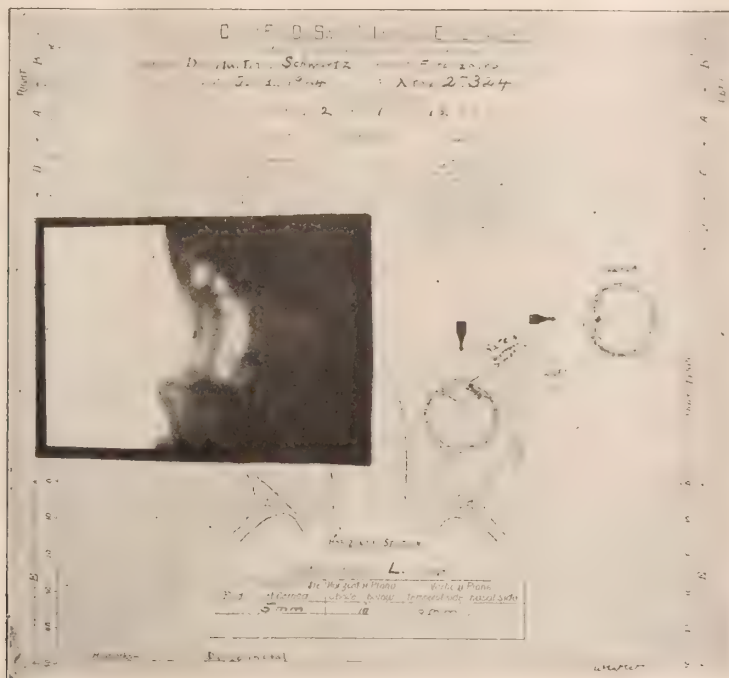


Fig. 1. F. G., injured Oct. 9, 1924, examined Oct. 30; complained of loss of vision and photophobia; no pain; cornea clear, without evidence of wound. Anterior chamber normal in depth; lens clear; in the irido-corneal angle of temporal side, slight bulging of iris and inflammatory changes; fundus normal. X-ray showed a totally dense foreign body $2 \times 1 \times \frac{1}{2}$ mm., in ciliary region, temporal side, 5 mm. back of cornea, 6 mm. to temporal side and in vertical plane. This corresponded to the bulging mentioned. On Nov. 9, foreign body extracted by giant magnet, anterior route; body became entangled in iris and iridectomy was done, foreign body being drawn through this opening. On Nov. 28, vision was 15/70 plus and eye quiet. On Feb. 10, 1925, vision was 15/50. **Comment.**—History indicated that eye was struck by rock. There was no visible wound of entrance when examined by ophthalmologist, yet there was a fairly large foreign body, which proved to be iron. Illustrates the necessity for x-ray examination in every injury to the eye.

localized with respect to the eye. In such cases, the errors are such as are inherent in the nature of the foreign particles, since tiny particles of hard dirt or some kinds or rock cast hardly any shadow and are sometimes not visible on the radiograph.

In the analysis of any large group of cases, the value of localization soon becomes apparent, and certain kinds of injury become impressive by their recurrence. In 500 consecutive examinations of eyes for

foreign body to one in which we need to localize. There is submitted herewith a tabulation showing the interesting features of the 146 cases upon whom localization was necessary. Supplementary to this, we wish to outline briefly several classes of injury in which radiography is especially valuable, with one or two typical illustrative cases in each class. Other instances of each of these groups will be found in the tabulation.

1. In some injuries there is demonstrable

intra-ocular damage but foreign body is not found in or about the globe.

Example: Ser. No. 108—J. T., on Oct. 25, 1925, was breaking rock with a hammer when something flew into his left eye. Examination in afternoon of same day showed incised wound of lower lid; also an incised wound extending from the limbus margin into the cornea and into the anterior chamber; through this opening the iris had prolapsed. X-ray (our No. 27.261) showed no shadow of foreign body localizing within the globe area. Prolapsed iris was amputated, and recovery was satisfactory, vision on November 10 being 15/15 with correction.

no pain; complained of loss of vision. Cornea was clear and there was no visible wound of entrance; anterior chamber was normal in depth, with fine pin-points of uveal pigment visible; balance of lens clear. In the irido-corneal angle of the temporal side there was a slight bulging of iris and evidence of inflammatory changes. Fundus was normal.

X-ray showed foreign body (No. 27,324) 2x1x1½ mm., of total density (metal) localizing in the ciliary area of the temporal side, in the spot corresponding with the bulging mentioned.

This was extracted on November 9, by giant magnet, anterior route. Foreign body became en-

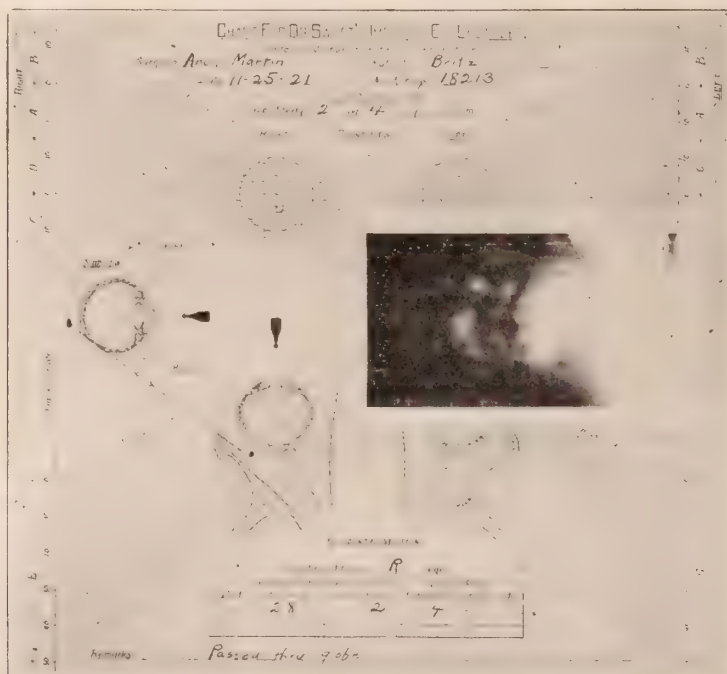


Fig. 2. J. B., injured April 2, 1917. Right eye became red and painful, with objects blurred. On April 3 there was marked ciliary injection, with clear cornea and lens, though vitreous was filled with blood clots. There was wound of bulbar conjunctiva and underlying sclera 6 mm. to temporal side of limbus in horizontal plane. Application of magnet gave no result. X-ray on April 3, by Dr. W. H. Sargent, showed the foreign particle posterior to the globe, in the same location as subsequently found by us. No further attempt at removal. On July 20, eye was quiet, no redness, lens clear, large mass of floating shreds in vitreous. Vision 7/200. On Oct. 25, 1921, x-ray showed foreign body, measuring 4x2x2 mm., lying posterior to the globe, 28 mm. back of cornea, 2 mm. below horizontal plane, and 4 mm. to temporal side of vertical plane. Eye was quiet; vision—light perception. **Comment.**—Illustrates value of localization before attempting extraction. Magnet in this case did no harm, but in some cases magnetic pull might be harmful. After ascertaining the location of this fragment, it was plain that extraction was not indicated.

2. With surprising frequency, cases present in which very careful search has failed to reveal any wound of entrance, and yet foreign body is localized in the globe by x-ray. This is more likely to happen when the injury is old, but may occur even when the injury is quite recent.

Example (Fig. 1): Ser. No. 109—On Oct. 9, 1924, while the patient was breaking rock with a hammer, a foreign body, supposedly rock, struck his left eye. When examined in Phoenix on October 30, there was lachrymation and photophobia, but

tangled in iris and iridectomy was done, the particle being drawn through this opening. On Feb. 10, 1925, vision was 15/15.

3. The foreign body may have passed through the globe, and the intra-ocular structures be so disturbed that ophthalmoscopic examination is of little value. In such cases, localization may prevent needless and sometimes injurious attempts to find the body or remove it.

Example (Fig. 2): Ser. No. 59—J. B., on April 2, 1917, while at work as boiler-maker, was struck in

the right eye by a piece of chipping. On April 3, there was marked ciliary injection, with clear cornea and lens, though vitreous was filled with blood clots. There was wound of bulbar conjunctiva and the underlying sclera, 6 mm. to temporal side of limbus in horizontal plane. Application of magnet did not bring foreign body into view, and localization by Dr. William H. Sargent showed the foreign body to be posterior to the globe in the same location subsequently found by us. No further attempt at removal was made and on July 20 eye was quiet and vision 7/200.

On Oct. 25, 1921, he was re-examined by us (18,213), localizing foreign body, 4x2x2 mm., lying posterior to the globe. Eye was quiet with light perception. It is probable that application of mag-

4. In cases of non-magnetic foreign bodies, like copper or rock, it is very essential to know whether there are intra-ocular particles, as the indications for enucleation or conservative treatment may depend on this information.

Example: Ser. No. 135—C. C., miner, age 18, struck a blasting cap with pick on Dec. 22, 1925, receiving wound in right eye. Examined on December 26. Lens opaque; wound in center of cornea, with wound through lens. Minute particles of copper in depths of corneal tissue.

X-ray (33,072) showed a foreign body about 2

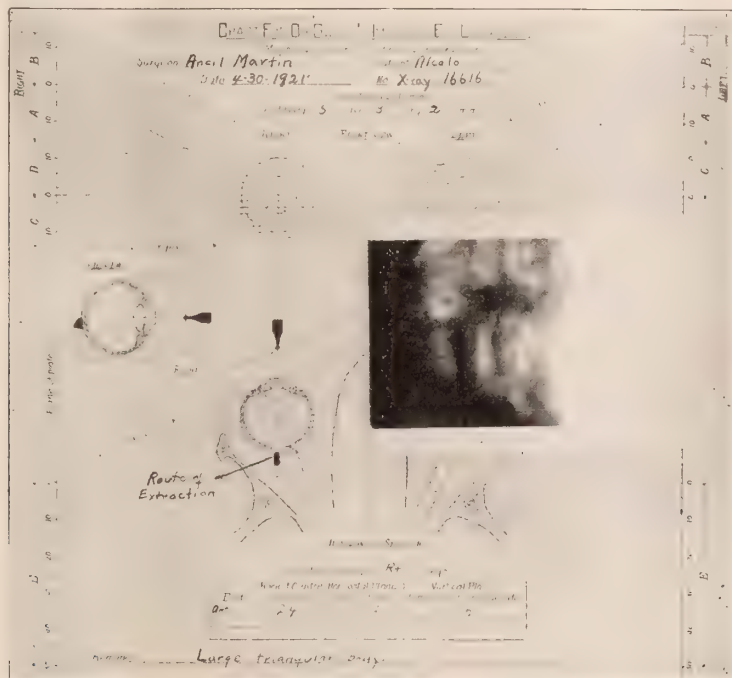


Fig. 3. O. A., injured April 28, 1921. Large central corneal wound in right eye, with swollen and flocculent lens; pupil irregular in size; tension minus. X-ray showed a large foreign body, 5x2x3 mm. in size, located just posterior to the globe, in the vertical plane, and just below the horizontal plane, having the density of heavy metal. Wound of exit evidently between macular region and nerve disc and may have injured both. Through a canthotomy opening into orbit on temporal side, foreign body was extracted with magnet. Patient discharged May 17 with eye quiet, tension normal, traumatic cataract. Light perception present. **Comment.**—Accurate localization of this foreign body permitted its removal without further injury to the eye.

net did no harm in this case, but after localization it was evident that removal was not indicated and its attempt would be futile.

Example (Fig. 3): Ser. No. 54—O. A., on Oct. 28, 1921, while using cold chisel on steel, was struck in right eye by flying particle. Corneal wound central and very large; lens flocculent and swollen; pupil irregular in size; tension minus.

X-ray (16,616) showed a large foreign body, 5x2x2 mm., located just posterior to the globe in the vertical, and just below the horizontal, plane.

This foreign body having evidently passed through the globe, a canthotomy opening was made in the temporal margin of the orbit and foreign body pulled through this with magnet. Patient was discharged on May 17, with eye quiet, traumatic cataract, but with light perception.

mm. square in the vitreous chamber; particle was too dense for rock and was probably copper.

Eye continued to be inflamed and, with knowledge that it contained copper, enucleation was done on Jan. 2, 1926. An irregular piece of copper was found in the vitreous surrounded by a green-stained focus of pus.

5. Where multiple foreign bodies have been blown into or about the eye, as after a blast, the treatment is usually guided by the presence or absence of intra-ocular particles in one or both eyes.

Example: Ser. No. 81—T. J., on July 9, 1923, picked into missed hole and received blast in face. When seen on July 12 he had extensive laceration of each cornea and numerous foreign bodies in the

substance of the cornea. Traumatic cataract in each eye.

(Note: Left eye was apparently the least injured, but the presence or absence of foreign bodies within the globe would determine the treatment.)

Radiographs of each eye area (22,922) showed numerous foreign bodies about each orbit. Two particles definitely localized within the vitreous chamber of the right eye, but no particles were localized within the left globe (5a).

Right eye was subsequently enucleated, chiefly to avoid sympathetic irritation of the left eye. Traumatic cataract was removed from the left eye. The visual impairment in this eye being due to corneal scars which limited vision to the perception of large objects nearby.

41. On July 3, 1923, while holding bar for drill, something flew into left eye. When examined four days later, there was a perforating wound of inferior portion of left cornea, with prolapsed iris, hemorrhage into anterior chamber, and large clot in the vitreous.

X-ray (22,896) showed a large foreign body, 4x3 mm., in the vitreous chamber, above and to nasal side of lens.

In view of the location and size of the particle, a new scleral opening was made, 6 mm. posterior to the limbus in the superior nasal quadrant, and foreign body was drawn through this with magnet. The inflammatory disturbance gradually subsided and eye became quiet, with light perception present.



Fig. 4. C. M., injured July 3, 1923. Examination of left eye showed perforating wound of inferior portion of left cornea, with prolapsed iris. Hemorrhage into anterior chamber and pupil displaced downward. Large clot in vitreous. X-ray showed a triangular shaped foreign body 4x4x3 mm. in vitreous chamber, 12 mm. back of center of cornea, 4 mm. above horizontal, and 3 mm. to nasal side of vertical planes. Density of heavy metal. Scleral opening was made 6 mm. posterior to the limbus in the superior nasal quadrant, L-shaped, and foreign body extracted by giant magnet. Inflammatory disturbance gradually subsided and eye became quiet but with light perception only. **Comment.**—Localization, by showing the size, shape, and location of this particle, guided surgeon in making posterior extraction through a new opening, thereby avoiding further intra-ocular injury.

6. The determination of the exact size, location, and shape of foreign bodies by x-ray frequently furnishes the necessary indication for the route of extraction of magnetic foreign bodies, or suggests the possibility of extraction by forceps of non-magnetic bodies. This improvement in technic has permitted the conservation of the eye or the vision in many instances where, without this guidance, the eye would have been totally lost.

Example (Fig. 4): Ser. No. 80—C. M., miner, age

Example: Ser. No. 103—W. J. M. On June 22, 1924, while chipping on a brass plug, something struck him in the right eye. Examined June 26; perforating wound of sclera on nasal side about 1½ mm. from limbus. Anterior chamber normal; lens cloudy; hemorrhage into vitreous; fundus not visible; vision, fingers at four feet.

X-ray (26,240) shows a large dense foreign body, measuring 9x9 mm., in the vitreous, with one end close to the inferior temporal scleral wall.

With this guidance, an incision was made through the sclera over the end of the foreign body. Application of magnet proved it to be non-magnetic, and it was grasped with forceps and extracted. It proved to be a piece of brass, measuring 9x9x2

mm. Eye quieted down; on August 14 patient was discharged with vision of hand movements at one foot; lens and cornea were clear, the loss in vision being due to vitreous opacities. On September 9, there was noticeable improvement in vision.

7. When foreign bodies change position, either unassisted, or after application of magnet, it is frequently very desirable to determine this by re-localization

Example (a): Ser. No. 96—P. M., miner, age 41. On Jan. 30, 1924 while working on cement floor, was struck by flying particle in left eye. Examination

ligament into the anterior chamber and extracted through wound of entrance.

Example (b): Ser. No. 121—Interesting, but of less practical importance, is an instance of a mobile non-magnetic foreign body. Patient was struck in right eye March 15, 1925, by piece of rock. First examining physician said that he could see it in the anterior chamber. Ophthalmologist could not see it, and x-ray examination (29,154) localized it in the posterior chamber, on the nasal side, it apparently having fallen through the pupil into the posterior chamber. On June 15, x-ray examination showed the particle to be in the anterior chamber on the temporal side.

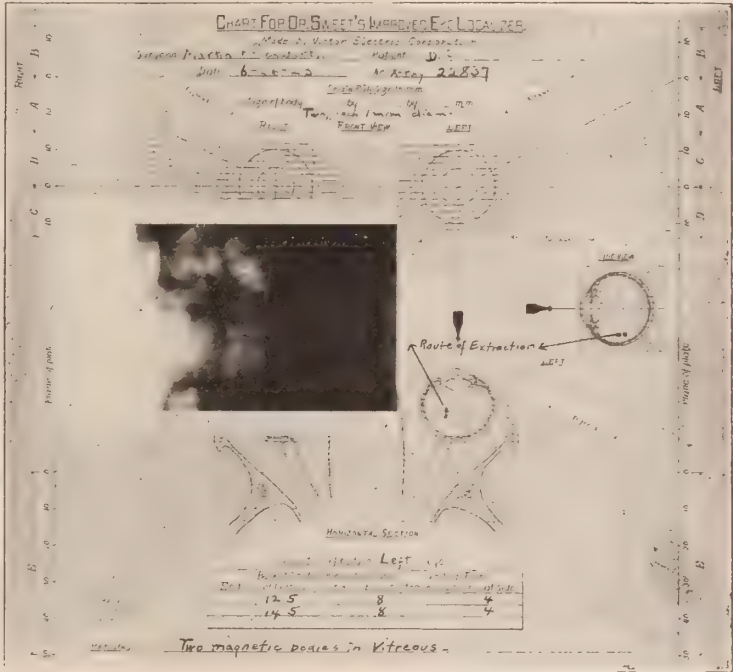


Fig. 5. D. S., aged 12, injured June 20, 1923. Examination of left eye four days later showed wound at upper margin of cornea; lens swollen and opaque; anterior chamber shallow. X-ray showed two foreign bodies of about the same size and density, in the vitreous chamber, 13 and 15 mm. back of cornea, 8 mm. below horizontal and 4 mm. to nasal side of vertical plane. They were of the density of heavy metal and lay close together without visible union between them. The two particles were extracted by the posterior route, through a new scleral opening; they came together, but dropped apart when magnet's attraction was removed. **Comment.**—Two magnetic foreign bodies in the same eye is an unusual finding, but is another illustration of the necessity for x-ray localization. The indications for extraction by the posterior route were also furnished by the x-ray findings.

showed a linear wound in nasal limbus, 2 mm. in length. Eye was irritable, lens opaque and photophobia present.

X-ray (24,616) showed a foreign body 2x1 mm., in the vitreous chamber against the posterior scleral wall. Density was that of metal.

Magnet was applied on February 1, which produced pain; foreign body did not appear in the anterior chamber, so that it became desirable to know whether it was dislodged. Re-examination showed the foreign body had been drawn directly forward and was now at the lower internal angle of lens. It was then pulled through the suspensory

Being a small foreign body and non-magnetic, and the eye being quiet with good vision, no attempt at extraction was made.

8. It is frequently possible to give a fairly reliable opinion as to whether a foreign body is metal or rock. For example, in the case described under Example (a), above, in which the patient was chipping on cement, from the density of particle it could almost certainly be placed in the class of heavy metals.

9. Cases of more than one magnetic foreign body are encountered. It is possible to extract one of these and leave others, if localization is not used.

Example (a): Ser. No. 132—M. I., was struck in right eye by piece of flying steel on Sept. 27, 1925. One piece of steel was removed by physician in Nacozari, Mexico. Examination in Phoenix on Oct. 23, 1925 (No. 32,044) showed a small particle in the anterior portion of lens; this was removed by giant magnet.

Example (b) (Fig. 5): Ser. No. 79—D. S., on

tional trauma, when the size, shape, and best route for extraction are indicated by x-ray.

Example (Fig. 6): Ser. No. 16—Patient was struck in right eye by piece from head of bolt on March 17, 1919. Cornea, lens, and anterior chamber not injured. Injury to floor of vitreous. X-ray examination (No. 8,751) showed very large, thin foreign body, more than half an inch long and quarter of an inch wide, shown projecting into the floor of the vitreous. By pulling directly back with the magnet, it was removed without additional trauma,

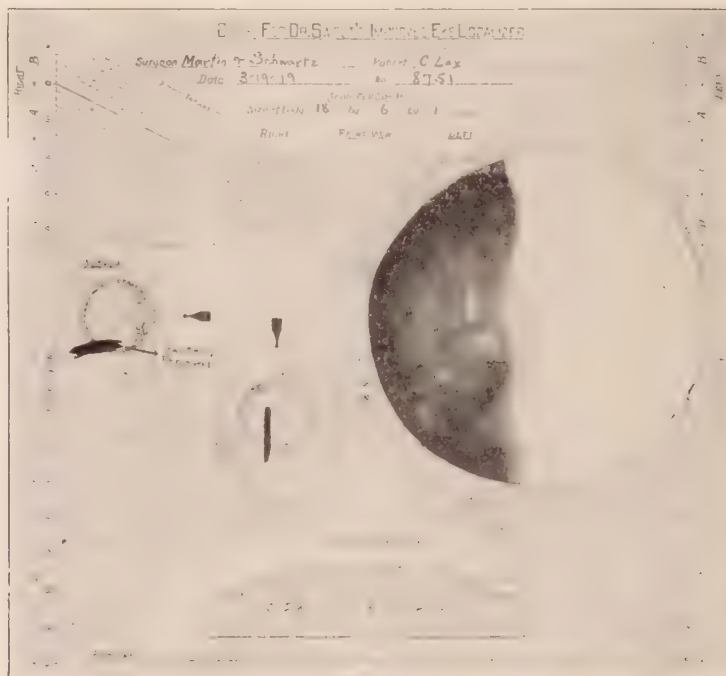


Fig. 6. C. L., injured in right eye March 17, 1919. Incised wound of lower lid, with soft tissues edematous; cornea and anterior chamber uninjured; lens clear; fundus clear in upper portion; large dark mass in floor of vitreous; vision in lower field only. X-ray showed a very large, thin foreign body localizing part way within the vitreous chamber and protruding posteriorly beyond the globe. By giant magnet, this was drawn back through wound of entrance. On April 7 he was discharged with eye of good appearance and with vision of fingers at three feet. **Comment.**—It is extraordinary to have so large a foreign body penetrate the globe and yet to preserve the globe after its removal. It was very thin and its shape and position, as shown by the localization, enabled the surgeon to withdraw it with the magnet with a minimum of trauma.

June 20, 1923, while chiseling out a rivet, felt something strike him in left eye. There was a single wound at upper margin of cornea, with lens swollen and opaque; anterior chamber shallow.

X-ray (22,837) showed two foreign particles, about the same size, one directly behind the other, in the lower portion of vitreous.

New opening was made in the sclera in the inferior temporal quadrant, and magnet applied. Both particles came out together.

10. Extraordinarily large foreign bodies can frequently be removed without addi-

and with preservation of the globe and partial vision.

In summarizing this review of our work with foreign bodies in the eye, we would conclude that accurate localization of such particles is not only desirable, as so conservatively stated in most papers on this subject, but is so necessary to the intelligent management of most injuries of this type that the procedure cannot safely be omitted in any foreign body injury to the eye.

TABULATION OF FOREIGN BODY LOCALIZATIONS IN THE EYE

Ser. No.	Date and X-ray No.	History and Injury	Localization	Treatment and Result
1	1-11-18 (5,230)	Oper. mch. drill; left eye wound, lower cornea.	F. b. 4x1 mm. in vitreous.	Not removed; vision permanently lost. M. and S.
2	4-3-18 (6,251)	Injury month old from striking drill with hammer.	F. b. in vitreous.	Magnet extraction of flake 1x½ mm. in diam. Vision 15/50; will grow less. M. and S.
3	8-13-18 (7,288)	Chip from mch. drill in L. eye; wound temporal limbus.	Large f. b. in vitreous.	Magnet extraction; hypopyon; enucleation. M. and S.
4	10-1-18 (7,557)	"Dust" fell in L. eye; incised wound inf. nasal limbus.	F. b. in vit.; density of metal.	Magnet extraction, ant. route; iridectomy; L. P. only account traumatic cataract. M. and S.
5	10-3-18 (7,586)	Hammering pipe; small perforating wound of cornea.	F. b. below and to temp. side of globe.	Not removed; dense lens opacity; vision 6/60. Evidently passed through eye. D. F. H.
6	10-10-18 (7,656)	Chiseling; struck L. eye; wound to nasal side of cornea.	F. b. 3x2 mm. in vitreous.	Magnet extraction through wound of entrance; infection; enucleation. M. and S.
7	10-11-18 (7,697)	Using drill; rock in eye 9 days before examination.	F. b. 3x2 mm., apparently in the vitreous.	Panophthalmitis; enucleation. Body in vitreous. D. F. H.
8	11-11-18 (7,944)	No record obtainable.	In vitreous to temp. side against scleral wall.	No record obtainable. R. R. B.
9	11-23-18 (7,998)	Struck on side of head; no recent eye injury; blind in R. eye.	Large f. b. 2x5 mm. behind and below globe.	No treatment; evidently old injury as shown by intraocular changes. M. and S.
10	1-10-19 (8,247)	Hammering, 28 days before; struck in R. eye; no def. scar of entrance.	F. b. 2x1x1 mm. in vit. hind, to nasal side of lens.	Magnet removal ant. route; lens opacity; vision 15/40 with correction. M. and S.
11	1-20-19 (8,302)	Dyn. cap explosion; perfor. wound of cornea and lens.	Small f. b. 1x1 mm. far back in vit.	Enucleation 4 days after injury; copper found, with pus focus surrounding. M. and S.
12	2-12-19 (8,494)	Injured 7-3-18; drill; no wound of globe seen; vis. now failing.	F. b. 2x1x1 mm. in vitreous, to temp. side.	Magnet removal post. route; vision 15/20 with correction on 2/25. M. and S.
13	2-18-19 (8,534)	Corneal injury by f. b. Lateral film showed shadow over orbit.	F. b. shown by localization to be external to globe.	Corneal ulcer healed; eye became quiet. F. b. not molested. M. and S.
14	2-28-19 (8,598)	Blasting cap injury to both eyes; only R. has vision.	F. b. in R. vit. L. eye not exam.	L. eye enucleated; R. eye has tubular vision; prognosis uncertain account f. b. in it. M. and S.
15	2-28-19 (8,599)	Inj. 12-9-18 by cap explosion; no visible wound of entrance.	F. b. in vit.; movable; varies position.	Not removed; eye quieted; vision 15/100 when last seen. M. and S.

TABULATION OF FOREIGN BODY LOCALIZATIONS IN THE EYE—Continued

Ser. No.	Date and X-ray No.	History and Injury	Localization	Treatment and Result
16	3-19-19 (8,751)	Piece from head of bolt struck R. eye, lower edge of sclera.	Large thin f. b. partly through floor of vitreous.	Magnet extraction; eye of good appearance; vision L. P. only. M. and S.
17	4-8-19 (8,887)	Piece of rock in eye 2 mos. before; no vision; wound sup.-int. quad.	Small f. b. of low density in vit.	Other eye was irritable and enucleation was performed; rock found. M. and S.
18	5-5-19 (9,302)	Inj. 3-3-19; drilling; R. eye inj. Eye painful and no vision on 5-5-19.	F. b. (rock?) in temp. side of eye; none within eye.	By June 30, eye was quiet but cornea was cloudy and little vision; old injury. M. and S.
19	6-12-19 (9,469)	Old inj. (in 1917); recent injury left no visible signs in eye.	Very small f. b. in vitreous.	Intra-ocular evidence of old injury; f. b. not molested; of medico-legal interest. M. and S.
20	6-13-19 (9,485)	Inj. 2 yrs. before while idgging; corneal scar, intra-ocular changes.	F. b. 2½x1 mm. to nasal side of eye.	Magnet applied; no impulse. F. b. not recovered; vision 4/200. M. and S.
21	6-23-19 (9,554)	Steel in R. eye; wound at upper temp. limbus; lens cloudy.	F. b. 7x1½ mm. in R. vitreous.	Magnet removed by ant. route; hemorrhage; no vision; enucleation advised. M. and S.
22	7-4-19 (9,647)	Dyn. cap explosion; lens opacities; fundus normal.	Two small particles in right vitreous.	F. b. not removed. Vision 20/50. J. J. M.
23	8-15-19 (9,908)	Flying steel in R. eye; wound through cornea; lens cloudy.	F. b. 3x2x2 mm. just behind lens in vitreous.	Magnet removal; infection followed and eye was enucleated. M. and S.
24	9-3-19 (9,999)	Hammering board; f. b. in L. eye; small wound at temp. limbus; lens cl.	F. b. 3x2x1 mm. in vitreous, far back.	Extracted by magnet, ant. route; later became irritable and was enucleated. M. and S.
25	9-22-19 (10,148)	Scleral wound; lens and cornea clear.	4x4x3 mm. f. b. in vitreous.	Magnet extract. through wound of entrance; much intra-ocular injury; L. P. only. M. and S.
26	9-25-19 (10,197)	Explosion.	F. bs. about each eye; 2 localize inside R. globe.	Enucleation of R. eye. E. C. B.
27	9-27-19 (10,200)	Blast; extensive injury to both eyes.	F. bs. in each eye.	Eyes destroyed; no sight. M. and S.
28	10-13-19 (10,337)	Cap explosion; incised wound across cornea; lens extruded.	F. b. 2x1 mm., probably copper, in vitreous.	Enucleated; copper found as localized, in pus focus in vitreous. M. and S.
29	10-17-19 (10,375)	Shot in face; no visible wound of globe; blood in vitreous.	Shot size f. b. behind globe near optic nerve.	Shot not molested; no L. P. Probably injury to nerve. M. and S.
30	11-14-19 (10,638)	Cap explosion; large wound in temp. side of cornea; f. bs. seen in ant. chamber.	No definite shadow of f. b. shown by x-ray.	Infection; enucleation; f. b. found in ant. chamber as noted; not shown by x-ray. M. and S.

TABULATION OF FOREIGN BODY LOCALIZATIONS IN THE EYE—Continued

Ser. No.	Date and X-ray No.	History and Injury	Localization	Treatment and Result
31	11-28-19 (10,742)	Rock fell in eye; f. b. buried in cornea.	Shown on dental film beside eye.	Non-magnetic; not removed. iridectomy for old iritis. M. and S.
32	12-23-19 (11,011)	L. eye struck; wound in sclera 7 mm. from temp. limbus	F. b. 4x3x3 mm. in vitreous.	Magnet removal through wound of entrance; mo. later no vision, detached retina; enucleation rec.
33	1-5-20 (11,123)	Hammering; struck in R. eye; no wound of globe.	F. b. below and in front of globe.	Could be felt in margin of orbit; not molested. M. and S.
34	1-6-20 (11,138)	Wound in R. eye region by bird shot.	Shot localized in orbit, near but not in the globe.	Not removed, as vision was not affected. V. M.
35	1-9-20 (11,167)	Hammering on metal (1918); struck in eye; scotoma and vit. opacities.	Small f. b. not def. localized in globe.	No treatment recorded; not seen afterwards. M. and S.
36	1-19-20 (11,672)	Blasted 1-1-20; ext. inj. to L. eye.	No f. b. localized in globe; one to temp. side.	Vision 15/200; R. eye 15/15. No surgical treatment, unless eye becomes irritable. M. and S.
37	2-20-20 (11,676)	Picking in rock; L. eye struck; claims no prior injury; no wound.	Small f. b. (rock?) in lower part of vitreous.	Old intra-ocular changes; injury positively not of recent occurrence. M. and S.
38	3-22-20 (12,058)	6 yrs. L. eye injury; 2 yrs. before, when hammering in steel.	F. b. in scleral wall of temp. side; 5x3 mm.	Removed with giant magnet; no visual disturbance. M. and S.
39	4-8-20 (12,306) (12,350)	2 mos. ago had f. b. in R. eye while grinding on emery wheel.	F. b. in ant. chamber; movable; two locations.	Removed by magnet, ant. route; lens was cloudy and was later extracted. M. and S.
40	4-20-20 (12,481)	F. b. in R. eye 14 yrs. before; spots in front of eyes now.	Very small f. b. shown in globe; not definitely localized.	Spots not due to f. b. Vision normal. F. b. doing no harm and not molested. M. and S.
41	5-29-20 (12,932)	Steel in R. eye 2 wks.; scleral wound on nasal side.	F. b. post. to globe in midline of orbit.	Not molested; vision lost account vitreous hemorrhage; F. b. went through globe. M. and S.
42	6-1-20 (12,962)	Dyn. cap; extensive injury to each eye.	F. b. found in each globe.	F. bs. not removed; left eye total loss; L. P. in right. M. and S.
43	6-9-20 (13,068)	Blasted in face; ext. injury to each eye.	One f. b. located in R. eye; none in left.	Corneal f. bs. removed and traumatic cataracts operated on; L. P. only account corneal opac. M. and S.
44 M. and S.	7-31-20 (13,625)	F. b. injury to each eye; cap explosion (?); R. eye injured more.	2 f. b. in R. vit.; 1 f. b. against L. sclera.	R. eye enucleated 8-5-20. F. b. in L. sclera not molested. No eye disturbance up to 8/10.
45 M. and S.	10-7-20 (14,219)	Explosion; piece of rock seen in lens; more f. bs. in each cornea.	Particles not shown by x-ray.	L. P. only in R. eye; corneal particles removed; enucleation of R. eye advised.

TABULATION OF FOREIGN BODY LOCALIZATION IN THE EYE—Continued

Ser. No.	Date and X-ray No.	History and Injury	Localization	Treatment and Result
46 M. and S.	10-9-20 (14,249)	Dyn. explosion 6/10; linear scar across cornea of L. eye; much intra-ocular damage.	Many f. bs. about eye; none localized in globe.	R. eye had been removed; L. eye had L. P. only and was irritable; probably small f. b. particles in globe.
47 M. and S.	10-22-20 (14,429)	R. eye struck by steel which was buried deep in cornea.	Localization indicated ant. chbr. (error of 1 mm.).	Removed by giant magnet. No visual disturbance. Error due to edema of conjunctiva.
48 M. and S.	12-11-20 (14,982)	4 wks. before, hammering on steel; L. eye injured; corneal scar.	Small dense f. b. behind center of cornea in vit.	Magnet extraction through inf. temp. opening in sclera; steel 2 mm. diam. Eye quiet; L. p. on 12-5-21, with cataract.
49 M. and S.	12-21-20 (15,062)	2 mos. old injury to L. eye; scar ext. limbus; lens opaque.	Small f. b. lying against post. border of lens.	Magnet extraction, ant. route; cataract left; eye quiet.
50 M. and S.	12-22-20 (15,278) 12-11-23 (24,077)	Inj. 4 years before; rock (?) in R. eye; lens opaque; L. P. only; 2 exams., both same.	Each localization shows double shadow in vit.; has density of rock.	No treatment first exam. At second, magnet applied but no impulse; not disturbed further.
51 M. and S.	1-11-21 (15,058)	Blasted 12/23; many corneal f. bs.; both lenses clear.	Locates f. b. in each vitreous, besides corneal.	Many superficial corneal bodies removed; deep corneal bodies left 1/28, vision R. 15/20; L. 5/50; localization considered error.
52 M. and S.	1-14-21 (15,320)	Struck in R. eye by stick; corneal wound; lens opaque; vision nil.	Dense f. b. below and to nasal side of eye.	Has been mechanic; does not recall any accident to explain steel f. b. Not removed.
53 M. and S.	1-22-21 (15,478)	Rock in L. eye in 1919; eye quiet; lens cloudy. Sept., 1920, struck in R. eye with rock.	F. b., of low density, 1 mm. diam. in vitreous R. eye.	R. eye being best eye, nothing was done 8x20x22, eye becoming irritable and L. cataract was extracted.
54 M. and S.	5-2-21 (16,616)	R. eye struck by particle from cold chisel; large wound cornea.	F. b. 5x2x2 mm. in orbit posterior to globe.	Removed through canthotomy opening by magnet, without disturbing eye. Eye preserved with L. P.
55 M. and S.	6-15-21 (17,012)	Blasted; many f. bs. in each cornea.	F. bs. in contact with globe.	Corneal f. bs. removed; vision good on R.; 2/200 on L.
56 F. L. R.	8-10-21 (17,393)	Working on car; wound over R. pupil; lens injury.	F. b. localized in vitreous.	Advised extraction with magnet; refused; patient not seen since. D. F. H.
57 M. and S.	8-16-21 (17,416)	Steel in L. eye 1908; one mo. particle in cornea removed.	F. b. 2x1 mm. in ciliary area lower edge.	Claims disability from recent slight injury; eye changes all old; not removed.
58 M. and S.	10-17-21 (17,855)	Blasted; many corneal f. bs. Perforation in center of L. cornea.	One f. b. in ant. chamber L. eye; none in R. globe.	Superficial f. bs. removed. F. b. not removed from L. eye; vision, O. D., 15/20; O. S., 15/50.
59 M. and S.	10-25-21 (18,213)	F. b. in R. eye in 1917 shown post. to globe; eye now quiet.	F. b. 3x1 mm. is just behind globe, temp. side.	Doing no damage; vision 7/200; not molested.
60 M. and S.	11-26-21 (18,219)	Blasted 4-13-21; bad injury to each eye with cataract.	Multiple f. bs.; one in left vitreous; R. side doubtful.	Treated elsewhere until sent for operation, for new pupil in R. eye. Rock in each eye.

TABULATION OF FOREIGN BODY LOCALIZATION IN THE EYE—Continued

Ser. No.	Date and X-ray No.	History and Injury	Localization	Treatment and Result
61 M. and S.	3-17-22 (19,128)	Blasted Oct., 1921; many f. bs. removed from cornea.	Inaccurate on account inability to fix vision.	Corneal f. bs. removed; one f. b. from iris; cataract removed from L. eye.
62 J. J. M.	6-16-22 (19,817)	Dyn. cap explosion; perforated iris and traumatic cataract.	F. b. not localized in globe.	Needled cataract 7/15; 3 mos. later reported by mail vision normal.
63 M. and S.	6-30-22 (19,913)	3 yrs. before gun shell exploded near him; R. eye now blind (8 yrs.).	Very small f. b. localizes in vit. of R. eye.	Eye quiet; vision, hand movements only. No treatment.
64 M. and S.	7-8-22 (19,945)	After dancing had pain in eye; no visible injury to eyes.	2 f. b., one localizing in R. vit., far back.	No record of treatment.
65 M. and S.	7-25-22 (20,052)	Explosion; multiple injury to eye.	No f. b. in globe; several in area.	Corneal f. bs. removed; vision fair in each eye.
66 M. and S.	8-22-22 (20,182)	F. b. in R. eye in auto race; 1 mo. before: corneal scar; L. P. only.	Very small dense f. b. in vitreous of R. eye.	Eye quiet; cataract; vision, fingers at one foot; treatment refused.
67 D. F. H.	9-11-22 (20,299)	Drilling; f. b. struck R. eye; lens disl. into ant. chamber.	1x1½ f. b. in vit., lower segment, to nasal side.	Magnet tried; not successful; eye enucleated and f. b. found as indicated.
68 M. and S.	10-5-22 (20,472)	Drilling; f. b. in L. eye; entrance through lower edge of pupil.	Dense f. b. 5x1 mm. in vitreous of L. eye.	F. b. removed through scleral opening with magnet. 11-13-23. eye quiet; cataract; L. P.
69 G. M. B.	11-4-22 (20,759)	Shotgun accident, wounds about eye.	No shot localized in globe; one in floor of orbit.	Not molested.
70 M. and S.	11-17-22 (20,833)	Drilling; thought was struck by rock R. eye; small corneal wound and lens opacity.	F. b. 1 mm. diam. against sclera in vitreous of R. eye; metallic density.	Could be seen with scope; drawn through zonula with magnet and extracted ant. route; cataract reduces vision
71 H. L. G.	11-24-22 (20,906)	Injury some time in past.	Shadow in R. orbit which does not localize in globe.	Medico-legal question of localization of this shadow, reported as being in eye.
72 M. and S.	1-25-23 (21,576)	Blasted 1/10; many f. bs. in cornea of each.	Probably 1 f. b. in R. sclera; others near by.	Many f. bs. left in cornea of each eye; R. eye irritable; may have f. b. in globe.
73 M. and S.	2-16-23 (21,613)	Putting in stull; f. b. in L. eye; large corneal wound nasal seg.	F. b. 5x3 mm. in ciliary region temp. side L. eye.	Removed through wound of entrance by magnet; infection resulted; enucleation 2-20-23.
74 M. and S.	2-20-23 (21,653)	Blasted; both corneas filled with rock.	At least 1 f. b. (rock?) in each globe; many near.	R. eye destroyed; after enlarging and clearing pupil on L. vis. 6/100 on 12-5-24.
75 M. and S.	2-23-23 (21,686)	Hammer on steel: L. eye injury; small wound nasal side of cornea.	Long narrow f. b. post. to globe on temp. side.	Inflammatory reaction had subsided; by April 6, insided and eye was quiet; cataract; L. P.
76 M. and S.	4-18-23 (22,208)	Steel L. eye in 1897; not removed; R. eye now irritable.	F. b. 3x1 mm.; dense; well back in L. vitreous.	No vision L. eye, but irritable; enucleation advised to prevent sympathetic trouble on R.
77 H. Y.	5-11-23 (22,455)	Using hammer on metal, piece struck L. eye; deeply embedded.	F. b. localized in scleral wall nasal side L. eye.	Magnet extraction; 20/20 vision.

TABULATION OF FOREIGN BODY LOCALIZATION IN THE EYE—Continued

Ser. No.	Date and X-ray No.	History and Injury	Localization	Treatment and Result
78 M. and S.	5-28-23 (22,690)	Blasted; numerous f. bs. in corneae and about eyes.	No f. b. localized in either globe; many near by.	Many corneal bodies removed; some left in; L. eye still inflamed 7/24; vision on L. P. on left; on R. 15/15.
79 M. and S.	6-25-23 (22,837)	Chiseling; wound corneal margin L. eye; lens opaque.	2 dense f. bs. lying close together in vitreous.	Extracted by magnet post. route; came out together; subsequent observation not recorded.
80 M. and S.	7-10-23 (22,896)	Drilling; L. eye injury; wound inf. portion cornea.	Dense f. b. 2x3 mm. in vit. above and to nasal side.	Scleral opening 6 mm. post. to limbus; magnet extraction; L. P. only account of cataract.
81 M. and S.	7-12-23 (22,922)	Blast in face; many corneal f. bs.; cataract each eye.	Many f. bs. about eyes; one in each globe.	Many bodies removed from each cornea; R. eye later enucleated; L. eye cataract removed; L. P.
82 M. and S.	7-13-23 (22,925)	Inj. 16 yrs. before; dyn. cap; R. eye lost; some vision in L. eye.	F. b. 1x2 mm.; not very dense, in L. vit.	Probably copper; not removed; shows tolerance of eye for copper.
83 M. and S.	8-1-23 (23,012)	Broke nose; claims eye injury; signs of old R. eye injury.	F. b. 1/2x1/2 mm. in region ciliary body R. eye.	Old eye injury with optic atrophy; no connection with present injury; eye blind.
84 M. and S.	9-5-23 (23,222)	7-1-23 struck in R. eye; no x-ray; has scar in cornea and lens.	Small dense f. b. within lens, R. eye.	Removed giant magnet, ant. route; discission lens 10/116; has had left cataract removed
85 M. and S.	9-15-23 (23,292)	Dyn. cap; both eyes injured; R. eye worse; traumatic lens.	Small f. b. in each vitreous; some doubt in location.	R. eye totally blind; new pupil made in L. eye; see fingers at 1 foot.
86 M. and S.	10-1-23 (23,409)	Blast in face; iris and lens injury, each eye.	Many rocks about eyes; one in R. globe; L. eye (?).	R. eye total loss; operations on L. with L. P.; not certain about f. b. in left eye.
87 M. and S.	10-30-23 (23,690)	Hammering on pipe; hit L. eye; scleral wound on temp. side.	F. b. in sclera on temp. side of cornea; rock (?).	Was piece of steel; removed by magnet; very thin scale; error in interpreting density.
88 M. and S.	11-12-23 (23,810)	9-6, tapping punch, hit R. eye; no visible scar on 11-12; no pain n w.	Dense f. b. 1x2 mm. well back in vit. of R. eye.	Is not disturbing eye or vision at present; would not permit removal.
89 M. and S.	11-12-23 (23,811)	Blasted; many wounds about face and eyes.	Many f. bs. about eye; none inside globe.	Corneal scars; no intra-ocular injury; vision 20/20 each eye.
90 M. and S.	11-14-23 (23,818)	On 10-22 cut on cornea; no f. b. suspected; lens opaque.	Small dense f. b. in vitreous of L. eye.	Removed by magnet ant. route; May, 1924, cataract removed; vision 15/30 with correction.
91 M. and S.	11-21-23 (23,903)	Blasted; f. bs. in R. eye (superficial); perforating wound.	Did not localize f. b. shadows in either eye; some near by.	Treated until Jan. 12, and discharged with good vision each eye.
92 M. and S.	11-26-23 (23,948)	Blasted; perforating wounds each globe; many corneal f. bs.	Numerous f. bs. and 1 in left eye; none located in R. globe.	R. eye destroyed; L. P. only in left; many rocks in each orbit and perhaps in each globe.
93 M. and W.	11-28-23 (23,958)	Blasted; many f. bs. about eyes and in cornea on each side.	At least 1 f. b. localized in each globe (rock).	L. P. in each eye; right may have to be enucleated; has rock in each globe.

TABULATION OF FOREIGN BODY LOCALIZATION IN THE EYE—Continued

Ser. No.	Date and X-ray No.	History and Injury	Localization	Treatment and Result
94 M. and S.	12-14-23 (24,129)	Blasted 11-27; severe injury to each eye, but worse on R.	No f. b. shown inside globes; many just against them.	R. eye destroyed; corneal f. bs. removed from left; few small ones left; vision 15/20.
95 D. F. H.	1-1-24 (24,289)	Dyn. cap explosion; many f. bs. about both eyes.	Many f. bs. about eyes; one in L. vit.; none in R. globe.	Magnet tried; no result. Eye said to have been removed by another doctor.
96 M. and S.	1-30-24 (24,616)	Working cement floor; 2 mm. linear wound at L. nasal limbus.	F. b. 1x1½ mm. in vit. of L. eye, far back.	Magnet applied; relocalization showed f. b. in ciliary region; removed ant. route; lens opacity.
97 J. J. M.	2-1-24 (24,643)	Hammering on steel; f. b. struck L. eye.	Small dense f. b. in nerve head of L. eye.	Small magnet unsuccessful; giant magnet removal; iridocyclitis; enucleation.
98 M. and S.	2-21-24 (24,866)	Injury to R. eye; all intra-ocular structures normal.	F. b. just outside of globe, nasal side.	F. b. removed; no damage to intra-ocular structures or vitra.
99 M. and S.	3-4-24 (25,000)	Flying steel L. eye; corneal wound 3 mm. from inf. nasal limbus.	Dense f. b. 1x2 mm. on floor of vit. L. eye.	Drawn out by magnet through wound of entrance; cataract removed; eye O. K. June 2.
100 D. F. H.	4-28-24 (25,603)	Flying steel in L. eye; no notes on appearance.	1x2 mm. f. b. in post. scleral wall.	Not extracted; on June 11 eye was quiet and vision 15/40.
101 M. and S.	4-28-24 (25,615)	Blasted; both eyes injured; corneal wound on R.	F. b. in vit. on R.; one against cornea on left.	R. eye enucleated in June; rock in vitreous; left eye quiet with some lens opacity.
102 M. and S.	6-13-24 (26,111)	Explosion; many f. b. wounds of each eye.	Many f. b. shadows about eyes; not def. localized.	R. eye enucleated on account trauma; vision left 10/200.
103 M. and S.	6-28-24 (26,240)	Chipping on brass; perforating wound of sclera, nasal side.	Very large f. b. in vit. of R. eye, 9x4x2 mm.	Piece of brass removed by forceps through scleral opening. Sept. 9, eye quiet; some vision.
104 M. and S.	7-29-24 (26,455)	Rock (?) in R. eye; small linear scar in cornea; lens cloudy.	Small fleck ½ mm diam. in lens.	Removed by magnet ant. route. Sept. 10, vision 15/40 with small corneal opacity; lens clear.
105 M. and S.	8-27-24 (26,637)	Flying metal R. eye; corneal wound, nasal side.	Large dense f. b. in upper part of orbit outside eye.	Evidently wounded cornea in passing; not removed; some corneal scar left.
106 M. and S.	9-8-24 (26,709)	R. eye struck while watching; 4 mm. wound of cornea, nasal side.	Shadow external to globe; not metal.	Eye cleared with slight cloudiness of lens; no f. b. though intra-ocular changes.
107 M. and S.	10-4-24 (26,997)	Chiseling; L. eye inf.; linear wound, cornea; lens cloudy.	Dense f. b., 1x2 mm. in vitreous, L. eye.	Removed by giant magnet; traumatic cataract removed 10/26, but no vision.
108 M. and S.	10-27-24 (27,261)	Breaking rock; L. eye inj.; wound of cornea; iris prolapsed.	No. f. b. shadow found in globe; one near by.	Iris amputated; recovery of eye and vision (15/15); R. eye blind, previous injury.
109 M. and S.	10-31-24 (27,324)	Rock (?) struck L. eye; no visible wound of globe.	Dense f. b. 2x1½ mm. in ciliary region L. eye.	Magnet extraction ant. route; 2-10-25, vision 15/50.
110 M. and S.	11-21-24 (27,592)	Both eyes injured some weeks before.	Many f. bs. near eyes; one against R. sclera.	R. eye enucleated account infection; corneal opacity on left; vision, fingers one foot.

TABULATION OF FOREIGN BODY LOCALIZATION IN THE EYE—Continued

Ser. No.	Date and X-ray No.	History and Injury	Localization	NINETEEN
111 M. and S.	11-26-24 (27,655)	Cap explosion; R. eye wound at nasal limbus.	Did not show f. b. localizing in eye.	Blood clot in vit. Eye was later enucleated; no record as to whether f. b. was found.
112 M. and S.	12-4-24 (27,736)	Blasted 10-12; several corneal scars.	F. bs. near but not within globe.	Vision somewhat interfered with by corneal scars.
113 M. and S.	12-6-24 (27,771)	Blast; wound of cornea and lens on left.	Small f. b. rock (?) in vitreous.	Infection and enucleation; rock found in vitreous.
114 M. and S.	12-24-24 (27,961)	Cap explosion; both eyes injured.	Small f. b. in L. behind lens; no f. b. located in R.	F. b. seen by scope in R. lens; L. lens opaque; neither eye molested; copper f. b. in each.
115 M. and S.	12-27-24 (27,993)	Exploded percussion cap; no corneal wound; intra-ocular damage.	Dense f. b. below and to nasal side of R. eye.	F. b. not molested, as probably globe was not penetrated.
116 F. L. R.	1-29-25 (28,433)	Auto mechanic; chipping; f. b. in R. eye.	Against sclera above hor. plane.	Magnet; three subsequent localizations showed no change in position; embedded or non-magnetic.
117 M. and R.	2-13-25 (28,607)	Blasted 12-13-24; many f. b. injuries to each cornea.	Many f. bs. near each eye, but not within.	Superficial corneal bodies removed; deep ones left. Vision L. 15/50 and R. 15/30.
118 P. and G.	2-17-25 (28,811)	Explosion.	Several f. bs.; one against ext. scleral wall R. eye.	Record of treatment and result not available.
119 M. and S.	3-5-25 (28,908)	10 yrs. before, f. b. in L. eye; vision failing; lens opaque.	Thin f. b. 2½x1 mm. in vitreous of R. eye.	No vision; irritable; enucleated and f. b. found.
120 M. and S.	3-19-25 (29,122)	Explosion; many f. bs. in each cornea.	Many f. bs. near globe, but none within either.	Superficial bodies removed; deep ones left; vision 15/40 each side, with correction.
121 M. and S.	3-20-25 (29,154)	R. eye injury; two recent corneal scars.	F. bs. about each eye; one in R. post chor	F. b. changes position; localized in post. chamber later in ant. chamber on opp. side of pupil.
122 M. and S.	4-3-25 (29,343)	Blasted; many corneal injuries of each eye.	F. b. not definitely localized in either globe.	L. eye enucleated; copper f. b. in vitreous. Lens extracted on rt.; may have f. b. in vit.
123 M. and S.	4-15-25 (29,565)	Blasted; numerous f. b. injuries each eye.	Many faint f. b. shadows; none def. within globe.	Both eyes destroyed; bodies in each globe; too small and faint to show by x-ray.
124 M. and S.	4-15-25 (29,566)	Cap explosion; wound through center of cornea.	Rock (?) 1 mm. diam in vitreous in R. eye.	Eye enucleated and f. b. found in position shown; does not state whether copper or rock.
125 M. and S.	5-8-25 (29,994)	Explosion; R. corneal scar; no intra-ocular changes.	Very small particles adjacent to globe; none in.	Eye quiet on May 14; vision not disturbed in either eye.
126 M. and S.	5-18-25 (30,181)	7 mos. before struck in eye when picking; 5 da. drop of oil fell in eye.	Small dense f. b. 1x½ mm. in vitreous L. eye.	No recent injury; L. P. only in eye; f. b. removed by magnet; suppurated; enucleation advised.
127 M. and S.	6-12-25 (30,514)	Blasted; many f. bs. on cornea each side.	Small f. b. in L. globe; none found in R.	Both eyes irritable; cataract removed from L. eye (V. 15.40); believe fine f. b. in R. eye.

TABULATION OF FOREIGN BODY LOCALIZATION IN THE EYE—Continued

Ser Mo.	Date and X-ray No.	History and Injury	Localization	Treatment and Result
128 M. and S.	6-27-25 (30,732)	Age 12; hammering; R. eye perforating wound of cornea nasal side.	2½x1 mm. f. b. in lower ciliary area R. eye.	Magnet extraction ant. route tension minus; prognosis not good.
129 M. and S.	7-4-25 (30,795)	L. eye inj. in 1914; no vision; R. eye now irritable.	2x1 mm. f. b. in L. vit. against scleral wall.	No treatment at present; glasses.
130 M. and S.	8-8-25 (31,124)	Age 12; dyn. cap exp.; wound lower limbus; lens opaque.	1x1 mm. f. b. in vit. R. eye; dense like metal.	No. magnet response; advised enucleation as no vision and may become irritable.
131 M. and S.	8-15-25 (31,196)	Blasted; many f. bs. in each cornea.	Many f. b. shadows near globe; none inside.	Corneal f. bs. removed; intra-ocular injury to left eye; cataract; eye quiet Nov. 30.
132 M. and S.	10-23-25 (32,044)	Struck steel 9-27; removed; not certain that all removed.	Very small f. b. in lens area.	Removed by giant magnet; vision 20/20.
133 M. and S.	11-19-25 (32,489)	Injured 11-15; blast in face; both eyes; many f. bs.	Did not localize f. b. in either globe.	L. eye enucleated; R. eye saved with 15/20 vision after correction.
134 M. and S.	12-18-25 (35,951)	Picking rock; R. eye corneal wound; lens opaque.	2x3 mm. f. b. in R. vitreous; density of metal.	Magnet extraction through wound of entrance; infection; enucleation.
135 M. and S.	12-28-25 (33,072)	Blasting cap; wound center of cornea.	Small f. b. in vit. L. eye, of metal density.	Eye continued inflamed and was enucleated Jan. 26; copper f. b. found as located.
136 M. and S.	2-5-26 (33,700)	Powder explosion; many f. bs. each cornea, 175 in R. and 375 in L.	All visible f. bs. external to the globes.	Eyes quiet on May 10; fair vision each eye; slight opacity left lens.
137 S. S.	2-5-26 (33,715)	Does not know how injury was sustained; poor vision.	1x½x½ mm. f. b. in ant. chamber R. eye.	Patient did not return for treatment.
138 M. and S.	2-10-26 (33,779)	R. eye injury; perforating corneal wound.	Dense f. b. in post. scleral wall.	Infection; enucleation; f. b. found as located.
139 M. and S.	2-10-26 (33,783)	Explosion; corneal injuries each eye.	F. bs. all outside of globe, near by.	Not molested; eyes recovered, with normal vision.
140 M. and S.	3-10-26 (34,192)	Blast in face; many f. b. injuries each eye.	F. b. in L. globe; very faint shadows.	Both eyes destroyed by force of blast and corneal f. bs.
141 D. F. H.	3-8-26 (34,209)	Dyn. cap explosion; many f. bs. about eyes.	Not def. localized in eye.	Eye later removed on account of panophthalmia; no f. b. found in globe.
142 M. and S.	4-8-26 (34,731)	Percussion cap; copper particles about L. eye.	Pinpoint densities over globe area.	Very small f. b. seen in lens. Proved to be magnetic and was removed with magnet; some lens opacity. Older injury?
143 M. and S.	5-26-26 (35,644)	Wound through upper lid; no intra-ocular signs; no vision or L. P.	Large f. b. post. to globe in nerve area.	Swelling and edema subsided; f. b. not removed; probably injured nerve.
144 M. and S.	6-2-26 (36,233)	Cleaning pipe 6 wks. before; struck in R. eye; corneal scar.	Small dense f. b. far back in vitreous of R. eye.	Could see a pinpoint size f. b. in lens also, not shown by x-ray; both f. bs. removed by magnet; prognosis good.
145 M. and S.	6-16-21 (17,012)	Blasted; many f. bs. in conj. and cornea.	No f. bs. localize within the globe on either side.	Corneal f. bs. removed; lens opacity on L., vision 2/200; lens clear on R., vision 15/15.
146 M. and S.	6-16-21 (17,015)	Blasted, with many corneal f. bs. on each side.	On R. one f. b. on sclera, temp. side; none in L. globe.	Corneal particles removed. R. vision, hand movements, L. 15/100. Corneal opacities.

COPPER FOREIGN BODIES IN THE EYE WITH REPORT OF THIRTY-SEVEN CASES

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Copper was the first metal mastered by man and, next to iron, is still the world's most important metal. It is found in nature as cuprous sulphide, the double sulphide of copper and iron, cupric oxide, cupric carbonate and, rarely, uncombined in crystallized isometric form or masses. The metal has a characteristic red color and is very malleable, ductile and tenacious. In the presence of moisture it is readily oxidized and absorbs carbonic acid gas. It is extensively used as metallic copper and the alloys of copper, such as brass and bronze.

When copper ore enters the eye, the amount of copper contained is so small that the foreign body does not have the usual characteristics of copper but more those of rock. The usual type of copper foreign body met with, is copper in the pure state.

In the records of the late Dr. Martin and myself, there are 291 of intra-ocular foreign bodies. Of these, thirty-seven are copper.

Most of the copper eye injuries occurred in the mining industry where large quantities of dynamite and copper percussion caps are used. In other trades and industries this type of injury is rare. The explosion of percussion caps was found to be by far the most common cause of injury. The caps are constructed entirely of copper. They are 8 mm. in diameter, 30 mm. long, open at one end and contain a charge of fulminate of mercury at the bottom. When the explosion occurs, the thin copper sheet, of which the caps are made, is torn and rolled into scroll-like fragments which may penetrate the eye. Frequently these accidents occur outside of the mines. Eight of our cases were in children under fourteen years of age. They found the caps and exploded them while at play.

The cause of injury by copper, in our series of cases, was as follows:

1. Percussion cap explosions—28
2. Percussion cap plus dynamite explosions—6
3. Cutting copper rivet—1
4. Chipping brass plug—1

According to Herschberg, the causes of injury to the eye by copper are:

1. Discharge of poorly constructed guns
2. Accidental explosion of percussion caps
3. Industrial work

The determination of the presence of copper in the eye is dependent upon three fac-

tors: the history of the case; the clinical examination; the x-ray.

The patient usually gives a history of having been in an explosion where a percussion cap was used, or was working with copper at the time of the injury.

The clinical examination may reveal particles of copper imbedded in the skin about the eye on the conjunctiva and cornea. A careful search is necessary to determine if the foreign body has entered the globe. If it passes through the cornea we can see the wound or scar and, just after the injury, signs of a perforation: namely, the loss of anterior chamber and reduction of tension. We try to follow the course of the foreign body. There may be a perforating wound of the iris and the lens may show an opacity. If it enters the eye through the sclera we often find a hemorrhage in the vicinity of the wound, or a portion of vitreous or uvea may be present. Usually copper is readily detected in the anterior chamber, but the angle of the chamber may form a hiding place, or it may be obscured by a hemorrhage. When copper is buried in the lens, it can nearly always be seen; if in the vitreous and the media is clear, it can sometimes be detected by the yellowish red reflex seen by focal illumination, the ophthalmoscope and slit lamp. If it has been present in the eye for a long time, the various structures gradually assume a greenish color which is known as chalcosis. This is in distinct contrast to the brownish color of the tissues designated as siderosis, when the foreign body is of steel. Chalcosis occurs much more slowly than siderosis.

In all eye injuries in which there is the slightest possibility of an intra-ocular foreign body, an x-ray examination is imperative. This will reveal the presence of a foreign substance, if it is of sufficient density to cast a shadow. When the presence of a foreign body has been established, the x-ray is used to determine its exact location with respect to the globe.

The opacity or density of various substances to the x-ray is in direct ratio to their specific gravity, as is shown in the following table:

1. Water	- 1	6. Glass	- 3
2. Pine wood	- .5	7. Iron	- 9.1
3. Bone	- 1.8	8. Copper	- 12.5
4. Rock	- 2.5	9. Lead	18.
5. Aluminum	- 2.6		

In this locality the most common foreign bodies from which copper has to be differentiated are rock and steel. The x-ray is a big factor in this. It is possible to distinguish between the shadow cast by copper and that of rock, copper casting a much denser shadow. The history also helps us

here for, in dynamite explosions the foreign body is usually rock, and in percussion cap explosions it is most commonly copper. The difference in the density of copper and steel is small, and it is often impossible to distinguish between them. This handicap may be overcome by the use of the magnet. Steel, being magnetizable, can usually be extracted while copper, which is non-magnetic, cannot.

When the foreign body is not visible we cannot be sure that it is copper—but the supposition that such is the case is dependent upon the following factors:

1. The history of the case
2. The development of chalcosis
3. The fact that it is non-magnetic
4. The x-ray

Copper undergoes chemical changes in the fluids of the eye and the salts of copper—particularly the carbonate of copper—can usually be extracted from the tissues. From observations up to the present time, it has been found that no organic compounds of copper carbonate develop with the albumin of the cells. Slow “coppering” may take place in all the tissues of the eye. There is a typical greenish sunflower clouding with its characteristic border rays. The lens shows a diffuse greenish gray color as well as a distinct iridescence.

Copper, as we know, is the most dangerous of all intra-ocular foreign bodies. The tolerance of the various structures of the eye to it varies greatly. If in the cornea and sclera, it may be borne indefinitely, but it usually has a tendency to slough out. When in the anterior chamber, it is probably more of an irritant than other foreign substances, but is often quietly carried in this location for years.

The lens tolerates copper better than any other structure of the eye. Copper in the vitreous is a very serious condition. It has a marked corrosive effect which is very destructive. A pus focus often forms around it. This has many times been demonstrated to be sterile, according to Leber's experiments and studies made by Weeks.

Copper, like other foreign bodies, may carry organisms into the eye. The infection plus the irritating effect of copper usually causes a vitreous abscess and the loss of the eye.

There is a marked difference in the resistance of eyes toward copper. It has an immediate action and a late action. The immediate action is due to corrosion alone or corrosion plus infection. There is often a marked reaction producing pus or an exudate in vitreous; retinal detachment with loss of light perception, and it is necessary

to enucleate the eye. These symptoms commonly occur within the first three weeks. If there is little or no reaction from the copper during this time, then it is borne nearly as well as other metallic foreign bodies. Of course, at any subsequent time the eye may be lost by a slowly progressing iridocyclitis. And it is quite common to have glaucoma develop. There is also the big danger of sympathetic ophthalmia occurring, and the eye has to be kept under constant observation.

There are many cases on record to show that copper is sometimes well tolerated. Melville Black observed a particle of copper in the center of the vitreous for fifteen years. Decker reports a small splinter of copper in the vitreous for six years, causing no irritation. Ruhberg cites a case observed for twenty years with copper in the vitreous. Raulin reports a piece of copper in the vitreous for twenty years.

Franklin and Cordes placed on record a case of copper in the vitreous for forty years, when it became necessary to enucleate. A bony cup filled the vitreous chamber, surrounding the copper.

Hertels states that, during the late war, fifty per cent of the eyes containing copper foreign bodies were lost.

Oloff observed a piece of copper in the lens for seven years. Vision remained 6/8.

Since copper is a non-magnetic foreign body, its extraction from the eye is a difficult problem. Of course, particles on the conjunctiva and those superficially imbedded in the cornea and sclera can be easily removed. When deep in the cornea, where their extraction might cause perforation or marked scar formation, it is best to leave them alone. If in the anterior chamber, it is possible, after making a corneal section, to grasp the copper with forceps and remove it. Should the foreign body be imbedded in the iris, one can extract it by doing an iridectomy.

Copper in the lens is usually left alone but if the lens is cataractous it can be gotten rid of by extracting the cataract. It is usually impossible to remove copper from the vitreous. In fact the difficulties are so great that it is rarely attempted, but, if the foreign body is large and visible, I feel that one should try to remove it, because the eye is usually lost if it is allowed to remain. In the case W. J. M. of our series, a large piece of brass lying in the vitreous could be seen with the slit lamp and ophthalmoscope. Posterior section of the sclera was made and forceps introduced into vitreous. Through the pupil we could see the foreign body and the forceps and were able to grasp

and extract the piece of brass. Recovery was uneventful. Four months later the eye was entirely quiet. (See illustration for localization by x-ray and size of foreign body.)

A recent case of Shahan suggests the possibility that in those cases where the vitreous liquifies, an incision can be made large enough to let the fluid out without damaging the base. The fluid mass containing cop-

later the globe had rounded out. Three or four weeks later the cortex filled the anterior chamber to a point where a secondary glaucoma developed. It was necessary again to open the eye, and again it caved in and the globe collapsed. The mass of cortex was worked out and the eye again filled with normal saline. Final vision was 20/15. It is still a good eye after one year.



Fig. 1. W. J. M., injured June 22, 1924. Examination of right eye on June 26 showed perforating wound of sclera on nasal side about $1\frac{1}{2}$ mm. from limbus. Anterior chamber normal; lens slightly cloudy; hemorrhage into vitreous; fundus not visible; vision—fingers at 4 feet. X-ray showed large foreign body, measuring $9 \times 2 \times 4$ mm., in vitreous chamber, one extremity close to sclera of temporal side. On June 26 incision was made through sclera, over end of foreign body; it was found to be non-magnetic and was removed with forceps, proving to be a particle of brass. On August 14 patient was discharged; eye was quiet; no changes in cornea or lens; massive opacities in vitreous; upper part of fundus could be indistinctly seen; vision—hand movements at one foot. **Comment.**—Localization of this fragment, so that scleral incision could be made over one end of it, made possible its removal without further trauma. It is very unusual to remove so large a non-magnetic foreign body from the globe and still preserve any vision, or even to preserve the eye for cosmetic value.

per or copper solution is allowed to run out and the eye may be saved.

The case was that of a patient aged fifty-one, who had only one eye and in the vitreous was a piece of copper. An incision was made in the cornea as usual, but before that was completed the vitreous began to flow out. The incision was completed and the globe caved in. The lens nucleus was removed with a loop. The wound gaped. He filled the anterior chamber with normal saline solution, thinking the eye was lost. When the bandage was removed four days

The copper may be absorbed, as in Green's case, where the copper could be seen in the vitreous by the ophthalmoscope and in eighteen months had entirely disappeared.

Occasionally copper is spontaneously extruded from the vitreous.

Jacquan reports a case of copper wire one centimeter long in the vitreous. An attempt at extracting was unsuccessful. Ten months later, when the eye was entirely calm, the wire pierced the end of the old incision and was easily removed.

Mock saw a piece of copper wire which

followed periods of slight irritation, escaped through the sclera and was found lying under the conjunctiva eight months later.

Halvez cites two cases of spontaneous escape of copper particles from the vitreous.

Proun observed a case where a piece of copper in the vitreous, nine months later was protruded through the sclera.

The results in our series of thirty-seven cases are as follows:

Nineteen eyes, or fifty-one per cent, were enucleated. Of these, sixteen were removed during the first month and three at later dates. In one case, sympathetic ophthalmia developed and the eye had to be enucleated.

Eighteen eyes were saved. Copper was removed from four of these:

- a. One from anterior chamber
- b. One from the lens
- c. One from the ciliary body
- d. One from the vitreous

Copper was retained in fourteen cases:

- a. In anterior chamber—3
- b. In lens —2
- c. In vitreous —9

The vision was:

- 1 case with 20/20
- 3 cases with 15/20
- 3 cases with 15/30
- 1 case with 15/70
- 2 cases with 15/100

In four cases there was no record of vision.

So we see that over fifty per cent of eyes injured by copper are lost. Now what can be done to prevent this great loss of eyes?

First, we must prevent such accidents. Most of them are due to the explosion of percussion caps. Persons using them must be instructed as to their danger and warned not to leave them around indiscriminately where children can find them.

Second, there is great need for further research as to the chemical action of copper on the eye. Who knows but in the near future we may be able to neutralize the corrosive action of copper by the injection of certain chemicals into the eye, and thus save many eyes which now are lost.

BRIEF OF CASES

I. W. V., age 6. Injured Oct. 15, 1903, by the explosion of a percussion cap.

O. S. was so badly damaged that immediate enucleation became necessary. The vitreous contained a piece of copper 3 by 2 mm., surrounded by a pus focus.

...O. D. In the cornea were imbedded two particles of copper which were removed. There was a penetrating wound at the temporal sclero-corneal margin, with a coloboma of the underlying iris. There was also a penetrating corneal wound to the nasal side, with a corresponding coloboma of the iris. Traumatic cataract. Cataract was removed. With a plus 12, vision was 20/30.

May 12 1918, states the eye has caused him no trouble. The x-ray shows a foreign body in the vitreous. Vision with correction was 20/20.

II. 27-5496, F. M. Age 12. Seen July 28, 1910.

Six weeks before, received an injury to the left eye by explosion of percussion cap. At corneo-scleral margin, on nasal side, is showing a perforating wound 3 mm. in length. Pupil occluded. Iris drawn tightly to area of wound. Due to tension on the iris it has become veil-like in appearance and, in places, separation of the iris is found. Lens and intra-ocular structures cannot be seen. Piece of copper 3 by 6 mm. imbedded in ciliary body, was removed on July 29, 1910. Enucleation advised should the eye become irritable.

III. 28-5518, M. M. Seen August 4, 1910. Struck in left eye by a piece of copper rivet, cutting lower lid and penetrating cornea on nasal side. Wound 4 by 5 mm. Iris prolapsed. Anterior chamber filled with blood clot and pus. Marked edema of conjunctiva. No light perception. On August 11th, eye enucleated. Foreign body surrounded by pus in vitreous.

IV. 33-6697, M. A. Age 13. On December 8, 1911, while playing with percussion cap, exploded same with lighted candle. The left eye shows a perforating wound of the lower lid and a perforating wound of the sclera 8 mm. below corneo-scleral margin. Globes lightly flattened at point of injury. Pupillary area clear, oval in shape; no vision. Eye remained quiet. Copper probably retained in vitreous.

V. 33-6698, R. A. Age 13. On Dec. 8, 1911, exploded a percussion cap by a lighted candle. The right eye shows at the corneo-scleral margin on nasal side, marked ciliary injection. Occluded pupil on nasal side. Enucleated.

The left eye shows a piece of copper imbedded deep in corner in lower outer quadrant. Piece of copper lodged in lens, which is opaque. Lens matter and copper extracted. Vision, with plus 13, is 15/20.

VI. 35-7100, P. G. Seen on July 12, 1912. Placed a brass rifle shell on muzzle of a rifle and fired. Examination showed wound of the cornea extending from the center of the pupil to sclero-corneal margin and dividing iris and injuring lens. Lens opaque. Vision, light perception. Magnet applied with no results. X-ray shows foreign body located in vitreous.

Right eye normal. Vision 20/20.

VII. 33-6691, M. M. Seen on December 31, 1912. On Dec. 8th placed candle on post on which was a percussion cap. Explosion followed. Pieces of copper found on various parts of body.

Examination of left eye shows a superficial wound of the cornea on the temporal side. No evidence of injury to the iris or lens. The vitreous chamber shows a large floating mass of a greenish tint. No fundus reflex. No vision. Eye quiet. Enucleation advised should irritation set in.

VIII. 40-8230, S. W. Age 8. Seen on Oct. 7, 1913, while at play, exploded percussion cap.

Examination of the right eye shows perpendicular division of the cornea extending into the sclera above and below. Anterior chamber filled with blood clot. X-ray shows foreign body in vitreous. On Oct. 9th pus appeared in the wound. Eye enucleated. Two pieces of copper found in vitreous. Vitreous disorganized and filled with blood clot. The crystalline lens was absent.

IX. 42-8559, F. J. Seen on Jan. 19, 1913. Springing hole in mine struck in right eye by foreign body. No pain. On second day noticed irritation and secreting. On evening of second day first noticed decided disturbance of vision. Conjunctival and ciliary injection. Cornea clear. Iris dark. Left iris gray. State formerly both eyes were gray. Pupil irregular. Posterior synechiae. Lens clear. Red reflex in vitreous. Probably hemorrhage. Tension minus. Vision, counts fingers at eight inches. X-ray shows foreign body in vitreous. Foreign body changes position on movement of eye. Magnet ap-

plied giving negative results. Eye enucleated Jan. 23. Examination revealed piece of copper 6 by 4 mm. in vitreous, focus of pus, large blood clot and detached retina above.

X. 44-8876. R. S. Age 10. Seen April 7, 1914. On Feb. 24 injured right eye by explosion of a percussion cap. Vision remained good for eighteen days after injury. Externally eye showed no inflammation. No pain. No photophobia or lachrymation.

Examination of right eye has appearance of being slightly smaller than left. Pupil reacts normally to light and accommodation. Tension minus. Opacity cornea below pupil. Scar of sclera 10 mm. below corneo-scleral margin. Anterior chamber normal. Lens clear. No vitreous opacities. The entire fundus has a changeable appearance. The disc is slightly swollen and margin blurred, the region of the muscle appears pale with deep pigmentation on temporal side. Foreign body passed through globe and lodged in the soft tissue of the orbit. Foreign body not removed.

Left eye normal.

XI. 44-8896. A. L. Age 25. Seen April 22, 1914. Eight days ago on way to motion picture show wind blew a foreign body into left eye. Rubbed eye and it became inflamed at once. On May 5, 1913, was in mine explosion and received injury to right eye and slight injury to left eye.

Examination of left eye shows congestion, lachrymation and photophobia, small piece of copper imbedded in cornea near lower scleral margin. Large piece of copper 10 by 4 mm. floating in lower anterior chamber. Lower half of cornea cloudy. Pupil 6 mm. Responds normally to light. Lens opacities. Though a keratome incision the foreign body was removed from anterior chamber. Eye remained quiet. Lens not extracted.

Right eye shows a foreign body deep in cornea just above center. Many opacities of the cornea. Traumatic iridectomy in lower nasal quadrant. Lens opaque and partially absorbed. Sept. 6, 1916, lens capsule incised. Vision, with plus 9, is 5/10.

XII. 44-9094. J. B. Age 53. Seen Dec. 10, 1916. One month ago building camp fire, a percussion cap exploded on ground, foreign body striking left eye. Vision lost immediately. Marked ocular, supraorbital and occipital pain. Left eye shows congestion; perforation in lower half of cornea, at which point is located an ulcer. Entire cornea hazy. Discolored iris. Two small pieces of copper on iris surface. X-ray shows foreign body in posterior part of vitreous chamber.

Right eye shows no evidence of injury.

Dec. 13, 1914, left eye was enucleated. Pus and piece of copper found in vitreous.

XIII. 51-9879. F. B. Age 46. Seen on March 25, 1916. While shoveling coal into a furnace, there was an explosion, presumably a percussion cap.

Examination of the left eye shows the conjunctival and ciliary vessels full. Perforating wound of the cornea in lower segment, about 2 mm. long. Wound of iris margin below corneal wound. Blood clot in anterior chamber. Lens opaque. X-ray reveals foreign body on floor of vitreous chamber. April, 1916, left eye enucleated. Piece of copper $2\frac{1}{2}$ by $2\frac{1}{2}$ mm. found in vitreous chamber.

Right eye normal.

XIV. 52-10785. M. O. Seen Oct. 3, 1916. Was working in a mine at 3 p. m. Went to the surface where he had a fire, upon which he placed a small piece of wood and about five minutes later an explosion occurred. Immediate loss of vision of left eye.

The left eye shows ciliary and conjunctival vessels full. Several corneal scars. Three small particles of copper on cornea. Lens hazy, through which red reflex is seen and through which foreign body probably passed. Coloboma of iris. Anterior cham-

ber normal. Color of iris equal in both eyes. Pupil irregular. Two posterior synechiae, uveal pigment deposits on anterior capsules of lens. Large white exudate area over macula is a round coloboma of the choroid with margins sharp and surrounded by dark ring. About 2 mm. anterior to coloboma is a light pink colored body of dumbbell shape, which may be shreds of tissue. Vision 15/30. Right eye normal.

XV. 56-11447. T. M. Age 21. Seen on Dec. 21, 1916. Both eyes injured as a result of a percussion cap explosion.

O. D. shows a small pterygium extending 1 mm. into the corneal surface. Moderate conjunctival and pericorneal injection. Cornea studded with a number of scars, pin-head and pin-point in size. There are also large numbers of minute, deeply buried, foreign bodies in corneal structures. Several foreign bodies of copper lying in anterior chamber. O. D. vision, 15/30.

O. S. condition in all particulars similar to O. D. Foreign bodies deeply buried in cornea. Pterygium smaller than in O. D. All intra-ocular structures normal. Lens clear. Vision, O. S., 15/20. Patient returned home.

XVI. 53-11002. S. J. M. Age 32. Seen Feb. 9, 1917. On Dec. 12, 1916, explosion of percussion cap injured both eyes.

O. D. enucleated by Dr. Wales.

Patient's O. S. was not injured at time of accident. No history of previous injury. Vision has always been good. Examination shows lids normal. Pupil reacts to light and accommodation. No fullness of bulbar vessels. Cornea shows an opacity just over temporal pupillary margin. Two small pieces of copper imbedded deep in cornea. The lens show a small opacity on temporal side. The lens opacity has several ray-like striations. In the lens opacity can be seen imbedded a piece of copper. Patient told to return home until such time as cataract is operable. Vision, 15/70.

XVII. 55-11340. F. L. Age 43. Seen April 25, 1917. Six months previous while holding percussion cap in hand, fell, exploding the cap, injuring both eyes.

O. D. enucleated.

O. S., light perception only. Has corneal wound at nasal margin. Pupil oval and displaced to nasal side. Active to light above only. Posterior synechia on temporal side and below. Lens opaque. April 28th, iridectomy and, on June 19, lens extracted. July 13, discission papillary membrane. April 5, 1919, vision 9/200, with correction. Still carries piece of copper in globe.

XVIII. 57-11662. W. L. Age 33. Seen July 24, 1917. Two days before, percussion cap exploded, filling left forearm, face and left eye with rock and pieces of copper. Vision immediately lost. Pain not severe since injury.

O. S. vision normal. Marked conjunctival and ciliary injection. Punctured wound at sclero-corneal margin on nasal side just above horizontal meridian in which is presenting iris or uvea. Cornea clear except wound in inferior nasal quadrant. Hemorrhage in anterior chamber. Iris darker than fellow eye. Pupil dilated and pear-shaped. Lens opaque. Fundus not visible. Vision, light perception only. Tension minus. July 25, 1917, O. S. enucleated. Pieces of copper removed from fundus at optic nerve.

O. D., normal appearance. Vision 20/20.

XIX. 61-12446. F. S. Age 48. Seen March 29, 1918. Blasted in August, 1917. Large number of foreign bodies deeply buried in cornea of both eyes. O. D. One copper foreign body in lower angle of anterior chamber. Lens opacities. Pterygium on nasal side 4 mm. on the cornea. Vision 15/200 lower field only.

O. S. Corneal opacities and foreign bodies. For-

sign body deep in anterior chamber. Pupil occluded and iris bombé. Light perception only. Eye very painful and marked irritability. April 5, 1918, O. S. enucleated.

XX. V. A. Injured Nov. 18, 1918, by blasting cap. Left eye destroyed and right eye has developed cataract. Seen Feb. 25, 1919.

O. S. Globe destroyed and atrophic.

O. D. Periphery of cornea hazy, and to temporal side of pupillary area small particle of copper. Lens clear and no evidence of cataract. Vitreous filled with dense opacities, fundus details not visible. Superior nasal quadrant dark mass, blood clot or detached retina. Has tubular vision only, with vision for distance equal to 15/20. Foreign body localized in globe; not magnetic and probably copper.

Left eye enucleated to protect right from sympathetic irritation. Prognosis guarded as to continued integrity of right eye.

XXI. 64-12124. O. B. B. Age 10. Seen Nov. 19, 1918. Twenty-four hours before, a dynamite cap exploded in the hands of a companion. Filled right side of face with copper particles.

O. D. conjunctival and ciliary injection. Anterior chamber filled with a blood clot. Traumatic iridectomy. Nov. 21, O. D. enucleated. Two pieces of copper found in vitreous, surrounded by a pus focus.

XXII. 64-12210. E. E. Age 7. Injured Jan. 17, 1919, by the explosion of a percussion cap.

O. D. Perforating wound of cornea; small particles of copper in the wound. Blood clot in anterior chamber.

Traumatic iridectomy underlying corneal wound. Slight photophobia. Globe soft. Eye enucleated four days after injury. Small piece of copper in vitreous, surrounded by a pus focus.

XXIII. 65-13358. V. A. Age 46. Seen Feb. 26, 1919. Injured by blasting cap.

O. S. Penetrating wound of cornea. Hemorrhage in anterior chamber. X-ray shows two foreign bodies in vitreous. No light perception. O. S. was later enucleated.

O. D. Small piece of copper in conjunctiva and cornea. Upper half of fundus not visible. Vitreous filled with dense opacities. Red reflex visible on temporal side. Two-thirds superior nasal quadrant is dark. Possible retinal detachment. Corneal periphery hazy. Vision 15/20. Field contracted (tubular). Foreign body in vitreous.

XXIV. 65-13360. E. E. Age 20. Seen Feb. 26, 1919. On Dec. 9, 1918, percussion cap exploded causing temporary blindness in right eye. In hospital few days and vision returned. Went to work.

Examination of O. D. shows slight conjunctival and ciliary congestion. Small opacity of the cornea on nasal side 4 mm. from corneo-scleral junction. Pupil 3 mm., reacts normally to light and accommodation. Large uveal pigment on anterior capsule. Vitreous cloudy. X-ray shows foreign body in vitreous. Eye quiet on Mar. 3, 1919. Advised enucleation should eye become irritable. Vision 15/100.

O. S. Normal. Vision 20/20.

XXV. 69-14100. O. D. Explosion Oct. 11, 1919, injuring O. S. Marked redness and edema of bulbar conjunctiva. Incised and lacerated corneal wound extending transversely through and across cornea, to and through temporal limbus and ciliary region out into sclera. Also perpendicular wound of cornea about center of transversal wound. Lens extruded. Enucleation, Oct. 14, 1919. Piece of copper found lying in a purulent focus in vitreous, in locality shown by X-ray.

XXVI. 83-16934. F. N. Age 22. Seen May 16, 1922. Injured in mine blast May 15, 1922.

O. D. wound, outer one-third of upper lid. Numerous small wounds over entire cornea. Wound

of conjunctiva 6 mm. below sclero-corneal margin. Divulsion of root of iris in superior temporal quadrant. Numerous glistening foreign bodies (copper) on iris on nasal side. Small hemorrhage into anterior chamber. Hemorrhage into vitreous. Lens clear. June 17, vision 15/50. Eye quiet.

O. S. entirely destroyed by large crucial wound of cornea involving entire cornea perpendicularly and horizontally, and extending into sclera. No light perception. Enucleated June 5, 1922.

XXVII. L. C. Age 8. Examined June 30, 1922. At five years of age, shot gun shell exploded near him. Did not notice injury. One week ago noticed that right eye was blind.

O. D. shows wound of iris and cataract. Vision, hand movements. Eye quiet. X-ray localizes foreign body in vitreous, probably copper.

XXVIII. E. C. C. Examined July 13, 1923. Injured 16 years ago by the explosion of a percussion cap. Both eyes injured. Vision in O. D. lost. Vision in O. S. was sufficient to get about.

O. D. globe atrophied. Occluded pupil.

O. S., parts of lens opaque. Posterior synechiae below. Slight pupillary reaction. Fundus reflex seen through clear portion of pupil. X-ray shows foreign body in vitreous, probably copper.

XXIX. 88-18019. G. B. Age 15. Percussion cap exploded three days before.

O. D., large punctured wound of cornea near nasal limbus, perforating wound of iris, lens opaque. Traumatic iridectomy. X-ray shows foreign body in vitreous. No light perception.

O. S. scleral wound on nasal side. Hemorrhage into vitreous. X-ray shows foreign body in vitreous. Nov. 28, 1923, counts fingers at distance of one foot. Eye quiet.

XXX. 92-18917. W. J. M. Age 24. Seen June 27, 1924. While chipping a brass plug, foreign body struck right eye.

O. D., conjunctival vessels slightly full. Large perforating wound of the sclera on nasal side, 2 mm. from sclero-corneal margin. Wound of ciliary body. Anterior chamber normal. Lens slightly cloudy. Hemorrhage into vitreous. Large foreign body can be seen lying back of lens in vitreous. Foreign body removed with forceps through scleral incision. Aug. 14, 1924, patient discharged. Eye quiet. Massive vitreous opacities. Vision, hand movements at one foot. Sept. 9, 1924, eye quiet. Vision as above.

O. S., vision, 20/20.

XXXI. 96-19524. T. A. Age 24. Seen Dec. 23, 1924. Both eyes injured by explosion of a percussion cap.

O. S., conjunctival and pericorneal injection. Piece of copper in cornea. Lens opaque and swollen. Scleral wound over ciliary body on nasal side. X-ray shows foreign body in vitreous, density of copper. Magnet gives negative results.

O. D., piece of copper lodged in lens which can be seen with the ophthalmoscope. X-ray negative. Jan. 9, 1926, eyes found in excellent condition.

XXXII. 97-19819. H. L. C. Miner, 31 years of age. April 11, 1925, dynamite cap explosion. Incised wound vertically through center of cornea. Iris prolapsed. Anterior chamber filled with blood. History indicates copper. Eye enucleated April 15, as it was impossible to remove foreign body. Copper foreign body found in position shown by x-ray.

XXXIII. M. N. Age 12. On Aug. 5, 1925, exploded a dynamite cap. Struck in eye by flying particle. Wound of entrance at inferior sclero-corneal junction, traumatizing iris, making a large irregular iridectomy. Lens opaque. X-ray shows foreign body in vitreous. Magnet gave no response. Advised enucleation, which was not accepted.

XXXIV. 97-19790. S. C. Age 32. Seen May 2, 1925. In a blast April 21, 1925.

The right eye has posterior synechiae on tem-

poral and nasal side. Lens opaque. Innumerable large and fine, superficial and deep, corneal foreign bodies. Vision 4/200.

The left eye shows vessels of the cornea. Many deep and superficial foreign bodies. Pupil small; posterior synechiae. Lens opaque. Vision, light perception.

April 7, O. S. enucleated. Copper found in vitreous. May 6, O. D., extracted flocculent lens material. June 11, capsulotomy. June 15, vision 15/100.

XXXV. 100-20365. M. N. Age 12. Seen Aug. 8, 1925. Five days before, while playing with percussion cap same exploded. O. D., ragged; traumatic iridectomy. Wound of entrance inferior sclero-corneal margin. Lens opaque. X-ray shows foreign body in vitreous chamber. Magnet gives negative results. Enucleation advised, which was refused by father.

XXXVI. 103-20865. Miner, age 18. Arizpe, Sonora, Mexico. Struck blasting cap with pick, Dec. 26, 1925.

Bulbar and conjunctival vessels injected.

Lens opaque. Traumatic cataract. Wound in center of cornea with tag of tissue down to surface of lens, where foreign body entrance into lens can be seen. Minute particles of copper in depths of corneal tissue. Eye continued inflamed and, on Jan. 26, was enucleated and irregular piece of copper, $1\frac{1}{2}$ by $2\frac{1}{2}$ mm. in size, found in posterior part of vitreous surrounded by a green copper-stained pus focus.

XXXVII. 108-21797. M. D. Age 7. Dynamite cap exploded, probably by himself.

O. D. Deep lacerations of both lids. Powder burns about the right cheek. Upper lid edematous. Bulbar conjunctiva congested. Incised wound of sclera 4 mm. behind limbus, $1\frac{1}{2}$ by $1\frac{1}{2}$ in conjunctiva. Possible that sclera is also involved. Punctured deep cut in cornea in pupillary area, 1 mm. in diameter. Anterior chamber cloudy. Media so cloudy that lens and fundus cannot be seen. Nov. 18, 1926, O. D. enucleated.

BOOK REVIEWS

(O. H. BROWN, Associate Editor)

Bronchoscopy and Esophagoscopy—A Manual of Peroral Endoscopy and Laryngeal Surgery, by Chaevalier Jackson, M. D., Sc. D., LL. D., F. A. C. S., professor of bronchoscopy and esophagoscopy, Graduate School of Medicine, University of Medicine, etc.; second edition, reset; octavi of 457 pages with 179 illustrations; 10 color plates; W. B. Saunders Company; 1927; cloth, \$8.00 net.

When the master writes there is little for a "little one" to do but to admire and compliment. Relatively few physicians do bronchoscopy and esophagoscopy and yet the first edition of this book was exhausted between 1922 and the present year.

This book is designed to present working fundamentals in regard to the knowledge of today on the subject of bronchoscopy and esophagoscopy and foreign bodies in the bronchi, trachea, esophagus, etc. All unessentials for a working manual are omitted.

The cuts are beautifully reproduced and the notes explaining the illustrations are particularly helpful in making them display their meanings.

A Textbook of Psychiatry for Students and Graduates in Schools of Nursing; by Arthur P. Noyes, first assistant physician, Saint Elizabeth hospital; The MacMillan Company; New York; 1927.

This is a splendid text upon psychiatry, for nurses. It can be read by most physicians with profit.

Noyes has a free, easy style of presenting his subject. He classifies it simply. The types of insanity are discussed in a way so that the untutored mind may readily derive a fair understanding of them. His preliminary chapters upon the development, purpose, structure and function of the mind, and the body of the book dealing with the types of mental aberration, are, in reality, preface to the last three chapters, to-wit: Care and Management of the Psychotic, The Nurse and her Professional Relations and Mental Hygiene and Social Psychiatry.

The work of the publishers deserves commendation. The author makes the common mistake of using the word people when persons are intended and would serve preferably. On page 89, fourth paragraph, the letter "a" is omitted from the word hyperamnesia. On page 212, fifth line of the second paragraph, the letter "e" is left off the word those.

Applied Biochemistry; by Withrow Morse, Ph. D. (Columbia), professor of physiological chemistry and toxicology, Jefferson Medical College, Philadelphia; second edition; revised and reset with the cooperation of Joseph M. Looney, M. D. (Harvard), assistant professor of physiological chemistry, Jefferson Medical College, Philadelphia; 988 pages with 272 illustrations; W. B. Saunders Company. Philadelphia and London; 1927; \$7.00.

This is the chemical age of medicine. The physician who fails to keep abreast of the advances of physiological chemistry, particularly as applied in the practice of medicine, is indeed antiquated; he cannot be giving the best of service to his patients.

One new book in the basic sciences, it has been said, should be read each year by every physician. I have no hesitancy in recommending that this book be placed upon that book shelf.

Professor Morse says he wrote this volume "with a view of weaving the woof of biochemistry into the warp of medicine." The preface to the first edition is a literary gem.

The text of the book may be a bit difficult for a physician who has forgotten his chemistry, to read. Let me quote from the preface: "The gods sell everything for labor." I might add: "They sell little without labor." The time spent upon such a work should be richly compensated—at least in satisfaction.

A novel feature is introduced, to-wit: The leaders in investigation in the field of biochemistry are introduced to the reader through their photographs.

The table of contents reads much as one would expect it to read. All the ordinary subjects are covered and their practical use in medicine is explained. In the early pages there is a presentation of what electrons may be like, with specific illustrations. The colloidal gold reaction of the spinal fluid is explained. Chemical formulae are numerous throughout the book. The newer knowledge upon the digestion of sugars, proteids, etc., is given. Thus it goes through all the pages.

NEWS ITEMS FROM THE SOUTHWEST

DR. E. W. ADAMSON, of Douglas, Ariz., recently provided an interesting health program for the Kiwanis Club of that city. As the guests of the ladies of the First Presbyterian Church, the opportunity for presenting scientific health information was good and full advantage was taken by Dr. Adamson, assisted by Dr. Hugo M. Helm, Dr. John

R. Newcomer (dentist) and Mr. A. G. Crouch (pharmacist).

DR. R. B. DURFEE, of Bisbee, Ariz., school health director, has been busily engaged in the work of that office. The first task was the physical examination of 3000 school children, assisted by two school nurses. This work has been finished. Along with this initial work, will be projected a cooperative health program, enlisting the aid of teachers, parents and pupils from the first grade to the senior high school grade. Any abnormalities or defects found will be reported to the parents with advice that they seek competent advice as to correction.

DR. W. J. JOHNSON, of Bisbee, Ariz., dentist, was selected as president of the Southwestern Dental Society, at their recent annual convention in El Paso. Tucson, Ariz., was selected as the place of meeting for 1928.

DR. EDWARD HINDLE, of the Tropical Society of Medicine of London, has been visiting his brother in Yuma, Ariz., recently. He spoke before the Kiwanis Club of Yuma on October 27th. Dr. Hindle has been for two years in China investigating tropical fevers.

DR. HARRY REESE, of Yuma, Ariz., full-time health officer of Yuma county, with the county school nurse, has completed the survey of the school children and reports that the health conditions are much better than they were last year, due to the cooperative health campaign promulgated.

DR. R. B. DURFEE, of Bisbee, Ariz., acting as local Red Cross secretary, announces the creation of the office of community nurse and the appointment of Miss Sara A. Vickery, formerly public health nurse with the Henry Street settlement in New York City, to this position. The local unit of the Anti-Tuberculosis Association and the local chapter of the American Red Cross are cooperating in maintaining this community nurse.

DR. P. R. OUTLAW, assistant city health officer of El Paso, announces the retirement from the school system of two teachers, one the principal of a grade school and the other a member of the high school faculty, because they have active tuberculosis. The teachers are examined yearly and any who have active tuberculosis are retired. Those with arrested tuberculosis are not regarded as objectionable from a public health standpoint.

Dr. Outlaw also announces that, in the future, the city ordinances will be enforced which make it unlawful for any proprietor of a food establishment to employ any person until a health certificate showing that no communicable disease exists, is presented.

TYPHOID IN NEW MEXICO

The outbreak of TYPHOID FEVER in northern New Mexico, which has been giving the health authorities much concern, is apparently under control.

Beginning during the latter part of the summer, by the end of October, there had been twelve cases in Santa Fe, with thirty five cases in Las Vegas and vicinity. The origin of the infection was ascribed to well water, by the state and county investigators. Much of the domestic water is taken from private wells, the owners of which have a false sense of security in the use of this water. The Old Oaken Bucket delusion is gradually yielding before the advance of scientific knowledge, but there is enough ignorance about the kind of water which is fit to drink, still prevalent, to permit such outbreaks as these to come from water. The heavy rains of the past summer caused seepage into many wells and turned them into sewage traps.

The BUREAU OF PUBLIC HEALTH of New Mexico have been cooperating with the American Child Health Association in a traveling milk laboratory. Howard R. Estes of the Association and Paul Fox, sanitary engineer of the Bureau, will conduct examination of milk over the entire state.

The STATE BOARD OF HEALTH of Arizona reported a total of 380 cases of contagious disease in the state during October. Of this number seventeen were poliomyelitis, ten were scarlet fever and fifty were diphtheria. This figure of 380 does not include the cases of tuberculosis reported during the month, of which there were 226, mostly from the Veterans' Bureau hospitals. A majority of the seventeen cases of poliomyelitis were listed from the northern counties, the epidemic in the southern part of the state having abated.

The BOARD OF MEDICAL EXAMINERS of New Mexico, at their October meeting, admitted fourteen applicants to practice medicine in the state and barred Dr. Joseph T. Gaines of Denver, from further practice in New Mexico, on the grounds of carrying unprofessional advertising in the newspapers. The attorney general is said to have advised the Board that they had the power to revoke a doctor's license to practice on the ground of unprofessional conduct and that it was within their power to determine what is unprofessional.

DR. ROBERT J. DOSTAL, city health officer of Jerome, Ariz., has been waging a campaign in that vicinity against diphtheria, with information in English and Spanish printed in the Jerome News, telling about the contagiousness and advising the use of toxin-antitoxin for prevention.

Dr. Costal, with the city nurse, has projected the work of the city health department into almost every phase of welfare activity, and they have been actively cooperating with the school authorities in preventing contagion among the school children. Monthly inspection of all the dairies is made by the city health officer, and the dairymen give cordial cooperation. All the herds have been tuberculin tested, and the dairies of the Verde district are said by Dr. Dostal to be as good as any in the state.

DR. E. S. MILLER, of Flagstaff, Ariz., paid a recent visit to the editor's office, en route to attend the Scottish Rite convocation in Tucson.

DR. CLARENCE GUNTER, of Globe, Ariz., was a recent visitor in Phoenix, on professional business.

DR. VERNON KENNEDY, of Phoenix, Ariz., is slowly convalescing from perforation of gastric ulcer, requiring an emergency operation. The doctor had already regained his strength following a recent operation for acute appendicitis, when the accident of this perforation occurred. There had been no previous symptoms suggesting ulcer of the stomach.

RESIDENT PHYSICIAN AT ST. JOSEPH'S HOSPITAL (PHOENIX)

DR. R. B. RANEY, a recent graduate of Creighton University School of Medicine, Omaha, Neb., has been engaged as resident physician for St. Joseph's Hospital at Phoenix, Ariz., and has assumed charge of this position. The new wing for this hospital has been nearly completed, bringing the capacity of the hospital up to 173 beds. A new power plant has also been built, furnishing steam heat to the entire plant.

DR. ORVILLE H. BROWN, of Phoenix, Ariz., (associate editor) has been confined to his bed by a painful and dangerous infection in the nose. This started as a furuncle in the wall of the nose, finally breaking inside the nostril. It occasioned considerable uneasiness to his attending physician and friends, for several days, before it localized and began to subside.

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PROCEEDINGS OF THE THIRTEENTH ANNUAL MEETING OF THE MEDICAL AND SURGICAL ASSOCIATION OF THE SOUTHWEST, HELD AT EL PASO, TEX- AS, NOVEMBER 2-5, 1927

Results of the intensive campaign initiated by the President, Dr. Willis W. Waite, Dr. Hugh Crouse, Chairman of the Program Committee, and Dr. W. Warner Watkins, Secretary-Treasurer of the Association, ably aided by members of the El Paso County Medical Society, for the biggest and best medical meeting the Southwest has ever had, were plainly indicated when the meeting convened at 9 a. m. on November 2nd, with a registration of 185 physicians and surgeons the opening day. Before the close of the convention the registration had reached 250.

Applications for membership were coming in so rapidly that the secretary proposed to the Association that all applicants whose credentials were unquestioned (members of county and state societies) be declared elected to membership. Motion was made to this effect and passed unanimously. The number of applicants elected to membership under this ruling at this meeting finally reached more than seventy.

The secretary presented the expressions of regret from Drs. Willard Smith and E. Payne Palmer, both of Phoenix, at being detained from attendance at this meeting by serious illness in their respective families. The secretary was instructed to send telegrams of sympathy and regret from the Association to each of them.

Other letters of congratulations from various members and regret at their inability to attend the meeting were read and placed on record.

The following committees were announced by the President, Dr. Waite:

Committee on Resolutions:—Dr. G. A. Bridge (Arizona); Dr. O. Egbert (El Paso); Dr. M. G. Paden (New Mexico).

Committee on By-Laws and Future Meetings:—Dr. R. D. Kennedy (Arizona); Dr. J. I. Butler (Arizona); Dr. Hugh Crouse (El Paso); Dr. W. L. Brown (El Paso); Dr. R. O. Brown (New Mexico); Dr. J. R. Van Atta (New Mexico)).

Committee assignments were made early owing to the fact that no long business sessions are provided for by the program, and it is necessary to have a Committee to consider the type of future meetings. Committees to report at the final business luncheon meeting the last day of the session (Saturday).

At the opening of the General Session, Rev. Marshall Dawson, pastor of the First Congregational Church, was introduced by Dr. Waite and delivered the invocation.

Honorable R. E. Thomason, Mayor of the City of El Paso, was introduced by the president and gave the address of welcome to the Association on behalf of the city and community as follows:

"Mr. President and Members of the Association: I am very happy to be here this morning for a few minutes as a public official, as well as a private citizen, to bid you a hearty welcome to the City of El Paso. I have been in office long enough and we have had enough conventions here for me to have by this time a kind of canned speech that I use on nearly all occasions. While I have never heard any compliments on the quality of my speeches, yet I have had a few on account of brevity, and I am sure that this will be more or less pleasing to you.

I am happy to see you in El Paso and to say that while this may not be the largest convention this city has entertained, yet I am sure I am right in saying that the quality is the finest we have ever entertained.

Perhaps one reason why I feel at home in a gathering of medical men is that my father was an active practitioner for more than forty years, so you see I know something about the ups and downs of the doctors. My mother wanted me to be a preacher, but I felt I did not have the necessary qualifications, so I thought I would become a doctor, but when I got into chemistry and a few pre-medical subjects, I found one had to study and work hard to be a doctor. It was then that my father suggested, as I did not have much brains, but did possess a fair amount of gall, why not be a lawyer; so I studied law, and have slipped, as you see, to politics—in a small way; so am going down hill rapidly.

We try to be a friendly city; we like to have conventions; we like to have visitors, and, of course, we want you to know something about us. It would be an easy thing to say to you, "you have the key to the city," and things along that line, but the people who are here from the Southwest know that. Those of you who come from the east and distant points may not, however, be acquainted with the western ways, where the people have learned from the early days that they had to be friends. We never would have gotten along in this country if there had not been cooperation and friendliness.

Now a few things about El Paso. We are the only city in the United States which has doubled in population every ten years since the census was first taken. The old sturdy pioneers who came here built quite a creditable city out of what was then only a village in the heart of the desert, so, of course, they had to be friendly people. We have to rub elbows with people, shake hands and smile with them and be friendly with them if we want to get anywhere, so I would like for you to know our people; we would like for you to know something about our miles and miles of paved streets and buildings of stone—you do not see any frame houses in El Paso. Then we have the irrigated valleys, fed by water from the great Elephant Butte Dam, which has made this country as rich as any in the United States, and a valley only a few years ago, where cotton could not be grown, this year has a crop that will exceed eighty thousand bales, not to mention alfalfa, fruit, vegetables and flowers of all kinds. Along with these material things, we would like you doctors to know something about our sunshine and climate. That is something I know you are vitally interested in because you want to do what you can to contribute to the lessening of disease and extension of life and making the people happier and healthier. We have approximately three hundred and thirty sunshiny days per year in El Paso and we are proud of it. I am probably safe in saying that in the majority of families in El Paso, some one or more persons in each family has come here for their health and in most instances where they come early enough they have been restored to health.

So we want our eastern friends to go out and enjoy this sunshine and then go home and advertise it; we want to make this Southwest come into its own. That is one of the biggest assets we have—and I am not speaking of El Paso alone, but for the whole Southwest. I would like you to investigate statistics and see the numbers of people who have been restored to health in this country.

From the bottom of my heart, and for the great rank and file of the men and women of El Paso, I bid you a very hearty welcome to the City of El Paso."

Dr. W. W. Waite, El Paso, president of the Association, in delivering the annual

address, asserted that the most important job the president has is to see that the program for the annual meeting is prepared. He stated that after considering the matter thoroughly, he finally got up sufficient courage to ask Dr. Hugh Crouse (El Paso) to be chairman of the Program Committee and, much to his surprise, Dr. Crouse accepted, and, though a very busy man, went to work with a will and arranged this, the first clinical Postgraduate Congress to be held in the Southwest. It speaks for itself.

Rather than give a stereotyped address, Dr. Waite said that he would like to recount some of the work of the Clinical and Pathological Club of El Paso, which he regards as one of the most valuable contributions to medicine which has been made in the southwest. During the past four years, approximately four hundred and fifty postmortem examinations have been held. One of the most remarkable results of this work was the finding of syphilitic aortitis as the primary cause of death in about ten per cent of these cases. One of the reasons why so few cases of syphilitic aortitis come to postmortem and why it is incorrectly classed as a rare condition, is that the patient usually dies suddenly and without hospitalization.

A number of specimens of heart and aorta were presented, to show the lesions of syphilitic aortitis.

The general topic for the first day of the Clinical Congress was TUBERCULOSIS, and the first speaker was Dr. Francis M. Pottenger of Monrovia, Calif. To be the first speaker on any program is usually not considered a favorable position, but Dr. Pottenger's drawing power as a teacher was handsomely attested by the fact that the room was filled when he began to speak. His paper is printed in full in this issue of this journal, together with report of the clinics held at Hotel Dieu the following morning.

Dr. Carl A. Hedblom, Professor of Surgery at the University of Illinois, Chicago, gave the second lecture on "Surgical Methods in Tuberculosis and Allied Conditions."

Dr. Hedblom had looked forward, he said, to this occasion with the keenest anticipation and already felt well repaid for having come. Detailing the operation known as pulmonary compression, he names its advantages as follows: :

1. Rests diseased lung.
2. Permits scar tissue shrinkage of lung.
3. Stimulates more complete fibrosis.
4. Collapses tuberculous cavitations, permitting evacuation and healing.
5. Promotes healing of other tuberculous lesions.
6. Arrests hemorrhage.

"The most important consideration in the surgical treatment is the proper selection of cases. Unless we are very careful, we are going to give this method a black eye, and prevent it from coming into its own, or at least this will be retarded."

Profusely illustrated with lantern slides, Dr. Hedblom's lecture showed graphically the advantages to be derived from thora-

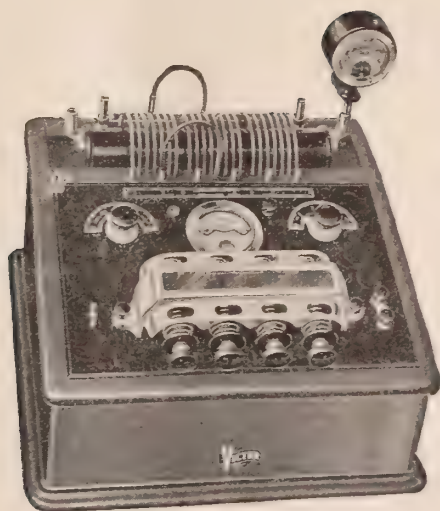
coplasty, giving results in 1159 cases in which the operation was performed, showing 36.8 per cent of cures.

At the clinical luncheon held at 12:30 p. m. at Hotel Hussman, Dr. E. B. Rogers, President of the El Paso County Medical Society, introduced Dr. Harry S. Crossen, Professor of Gynecology at the Washington University, St. Louis, Mo., as the first speaker.

REGISTRATION OF DOCTORS

Medical and Surgical Association of the Southwest—
November 2-5, 1927

- | | | |
|---|--------------------------------------|--|
| Adams, V. K., Santa Rita, N. M. | Greer, J. M., Phoenix | Phillips, E. W., Phoenix |
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| Anderson, W. H., El Paso | Haffner, S., El Paso | Powers, H., Rankin, Texas |
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| Barrett, F. O., El Paso | Hedblom, C. A., Chicago | Reid, H. P., Fort Stanton, N. M. |
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| Brown, O. E., Tucumcari, N. M. | Humber, John, San Francisco | Safford, H. T., El Paso |
| Brown, R. O., Santa Fe | Hutter, Major, Beaumont Hospital | Schuster, F., El Paso |
| Brown, W. L., El Paso | Imel, E. S., El Paso | Scott, Major T. E., Fort Bliss |
| Browne, L. E. J., Fort Bliss | Jenness, B. F., El Paso | Sexton, T. C., Las Cruces, N. M. |
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| Bynum, J. T., El Paso | Kennedy, R. D., Globe, Ariz. | Smith, L. M., El Paso |
| Callander, R. J., Tucson | Kinard, Harvey S., El Paso | Snow, W. R., Abilene, Tex. |
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| Cantellas, P. R., El Paso | Laben, G. J., Sacaton, Ariz. | Steele, J. H., Wagon Mound, N. M. |
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GRANT COUNTY (N. M.) MEDICAL SOCIETY

Regular monthly meeting of the Grant County Medical Society was held Oct. 28, at 8 p. m., in the Officers' Club.

The meeting was called to order by President Kramer.

Roll call showed the following present: Drs Browne, Parmenter, Mann, McFarland, Lacy, Geringer, Danielson, Donahue, Bulson and Wood.

It was proposed that a dinner and smoker be given on the December meeting night. The subject was freely discussed. It was voted that, on a date to be fixed later, the County Medical Society have a dinner and smoker to which the wives of the members should be invited. A committee composed of Drs. Kramer and Frazin was appointed.

The subject of the evening was Tuberculosis of the Upper Respiratory Tract, by DR. J. E. LACY. Two cases were presented of tuberculous glossitis, one of which also showed tuberculous ulcer of right fauces. These cases have shown satisfactory improvement under silence, heliotherapy and trichloroacetic acid. The subject was well handled by Dr. Lacy who has had a great deal of experience in this line of work. There was free discussion.

DR. JOHN L. DONAHUE presented a case of severe bronchial asthma. Patient had asthma when discharged in 1918, which grew progressively worse, terminating in his death by heart failure, Oct. 25, 1927. Patient also had pansinusitis. Asthmatic seizures and heart condition prevented surgical measures. Blood pressure was found to go up under epinephrin administration. Massive doses of adrenalin had no effect on the asthmatic attacks, nor did morphine. Postmortem was not held. The subject was freely discussed.

Meeting adjourned 10:25 p. m.

J. P. WOOD, M. D.

D. KRAMER, M. D.,
Pres.

Sec. & Treas.

DEACONESS HOSPITAL (Phoenix)**Annual Staff Meeting—October**

The Medical and Surgical Staff of the Arizona Deaconess Hospital met for the annual meeting at the Hospital, Monday evening, October 24, 1927. 6:30 p. m. for dinner. Forty doctors were present. After dinner they adjourned to the Board room.

This being the annual meeting, the election of officers for the ensuing year was stated to be the first order of business. The following were nominated and elected unanimously:

Chairman of the Staff:—Dr. L. H. Thayer.

Secretary of the Staff:—Dr. Orville H. Brown (re-elected).

The Records Committee reported upon the deaths for July, August, and September as follows:

Case 1078: entered June 18, died July 13. Man age 58, with diagnosis of cerebral hemorrhage. This man was apparently well up to the time of his stroke. It is the sort of a case in which the doctor should be compelled by law to have a postmortem.

Case 1167: entered July 7, died on 8th. Peritonitis from ruptured appendix; operation refused until nearly moribund.

Case 1154: entered July 3, died on the 4th. Baby girl, 30 months old; diagnosis of gastro-enteritis, with probable terminal encephalitis.

Case 1144: entered June 29, died July 2. Tuberculosis of lungs, larynx and intestines.

Case 1232: entered July 18, died same day. Boy, age 7; diagnosis of anterior poliomyelitis. Symptoms and course were very atypical, but cannot criticize the diagnosis. Cell count was 30, which is in conformity with poliomyelitis.

Case 1202: entered July 11, died on the 12th. Man, age 42, diagnosis of insolation.

Case 1180: entered July 8, died on the 28th; man, age 57; diagnosis of pernicious anemia, which was borne out by the symptoms and blood findings.

Case 1261: entered July 24, died the 26th. Punctured wound of right lung and chest. There is a very excellent history provided by Dr. Hamer.

Case 1242: entered July 18, died the 23rd. Boy of 15, with acute appendicitis, which had been going on several days before calling the doctor. Appendix had not ruptured, though the course indicated that there was extension of infection to the peritoneum; fecal fistula developed before death and there was also lung complication.

Case 1292: entered July 29, dying same day. Diagnosis of bronchial asthma. We have once before raised question about bronchial asthma being a cause of death. Perhaps it can be.

Case 1277: entered July 26, dying the 27th. Physical examination by Dr. Hamer is a good one, but the diagnosis could be almost anything causing coma. One could not, from the recorded findings, diagnose uremia.

Case 1421: entered August 23, died the 31st. Man, age 33; pulmonary and meningeal tuberculosis. Excellent history. Bacilli were found in spinal fluid.

Case 1391: entered August 19, died the 21st. Baby, age two years; encephalitis. Discussed last month in staff meeting.

Case 1388: entered August 18, died the 19th.

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Fractured neck; discussed at last month's staff meeting.

Case 1440: entered August 30, died September 11. Tumor of the ascending colon producing obstruction. Probably malignant. Anastomosis on Sept. 3. Death on the 11th, apparently from lung embolism.

Case 1393: entered August 19, died Sept. 14. Woman, age 33; parturition at term; normal delivery and uneventful course until the eleventh day, when thrombophlebitis developed; pulmonary embolism occurred and was the cause of death.

Case 1366: entered August 13, died the 27th. Diagnosis of cancer of the liver. Discussed last month's staff meeting. An autopsy, as suggested by the secretary, would have been desirable, to see whether this really was cancer.

Case 1526: entered September 16, died the 28th. Diagnosis of anhydremia. Is anhydremia a disease or a symptom?

Case 1481: entered September 8, died the same day. Middle aged man, entered in diabetic coma. Entered September 4 and went out on the 5th; his routine urine examination apparently pointed to the diagnosis. He came back on the 8th in coma. After death, autopsy was performed, with some interesting findings.

The further program was as follows:

CASE I.

Case 1570: glaucoma, presented by DR. E. C. BAKES. History of this case is as follows: A female, 73 years of age who had, for two or three years past, supposed neuralgia of left side of head. Six weeks before admission to the hospital, the sight of her left eye began to fail. There was a good deal of redness of the eye. Two weeks previous to admission to the hospital, the patient reported to the doctor's office, and there was found

extreme redness of eye, dilated pupil and high tension of the eye ball. She was just barely able to see. Diagnosis was hemorrhage of the retina. Two weeks' treatment failed to give relief. Dr. Harbridge was called in consultation and concurred in the diagnosis of glaucoma and the advisability of enucleation. The eye was removed on the 25th of September. The urine findings were normal, the blood had 90 per cent hemoglobin, red cells numbered nearly five million, leucocytes 18,900, with 82 per cent polynuclears. The patient made an uneventful recovery, and was discharged from the hospital on the fifth day.

The essence of glaucoma lies in the increase of intraocular pressure, from which all other symptoms can be deduced. In one series of cases the increase of pressure sets in without our being able to discover a reason for it in an antecedent disease of the eye (primary glaucoma). In other cases, on the contrary, the increase of pressure is the result of some other disease of the eye (secondary glaucoma).

In glaucoma inflammatorium, we have a prodromal stage characterized, first of all, by attacks of obscuration of vision. When such an eye looks at a light, a ring of colors is seen. The person will have a dull frontal headache and feeling of tension in the eye. Examination will show cornea slightly clouded, greatest in the center, and sensibility reduced; the anterior chamber is shallower, the pupil dilated and reacting sluggishly, and the tension is distinctly increased. There may be slight ciliary injection present. These attacks may recur from time to time over a period of from a few weeks to several years. This results eventually in an acute attack with violent pain radiating from the eye along the first and second branches of the trigeminus. The patient complains of pains

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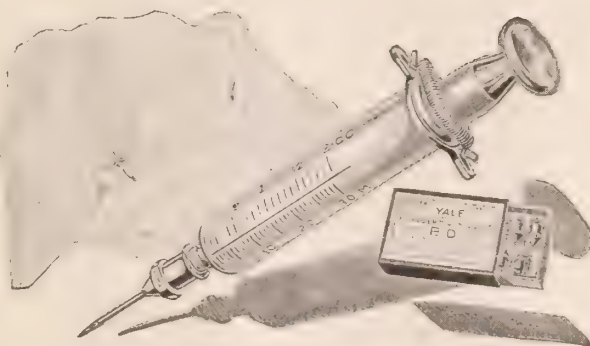
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in the head, ears, and teeth, which may reach an intolerable pitch. Loss of sleep and appetite, with vomiting and fever, are not infrequent symptoms. After the subsidence of the attack the eye may remain quiet for some time, then another attack sets in—this being repeated until the third stage of absolute glaucoma results. The eye is now completely blind and presents the following picture: Contrasting with the porcelain-like bluish white sclera, are the distended anterior ciliary veins, which unite around the cornea to form a bluish-red circle; the cornea is shining and transparent, but insensitive; the anterior chamber is now very shallow, the iris is reduced to a narrow strip; the pupil is extremely dilated and rigid; the optic disc is deeply excavated and the eye is very hard.

In glaucoma simplex, the subjective symptoms are entirely wanting, except the attacks of disturbance of vision. There is often very slight increase of tension but after many attacks the optic disc will show the characteristic cupping. These cases are hard to diagnose and only the ophthalmoscopic findings and the history will lead to a correct diagnosis.

Primary glaucoma is a common disease constituting about one per cent of all cases of eye disease. Its accurate recognition is of the greatest importance for the general practitioner, the more so because here prompt and proper therapeutic interference can save the sight. Unfortunately, we still get many cases of glaucoma which have been overlooked or improperly diagnosed by the general practitioner and who come to the ophthalmologist when help is no longer possible. Many cases of glaucoma are diagnosed as migraine. Cases of inflammatory glaucoma are not infrequently treated as iritis or irido-cyclitis. Atropine is particularly deleterious in all forms of glaucoma and may bring on an acute attack with loss of the eye in an otherwise simple case. The thing I wish to stress is that any case of headache, migraine, particularly pains confined to one side of the head, should put you on your guard for possible diagnosis of glaucoma in some form.

DR. YANDELL asked what was the condition of the other eye. He remarked that authorities advise that it is particularly important, especially in younger persons, to know what the tension of the other eye is. Some advise using homatropin to see if it increases the tension of the good eye. Some also advise that the good eye should be treated with eserine and pilocarpin over long periods of time. The strength of the eserine solution should be gradually increased until three grains to the ounce is used.

DR. SCHWARTZ said that one might gather from discussion so far, that glaucoma is nearly always accompanied by pain; as a matter of fact, pain in glaucoma is rare. There are two kinds of glaucoma, simple and inflammatory. In the simple, the patients go for long time relatively free of pain. The first sign, often, is that the patient reports to the doctor's office for the purpose of having his glasses changed, saying that there has been a rapid failure in eye sight. The cause may be an early insidious glaucoma. In inflammatory glaucoma, the treatment should be prompt. The eyes in these cases always show inflammatory changes. The word glaucoma is from the Greek word meaning green. The treatment of inflammatory glaucoma is oftentimes a problem. It is difficult to know what to do. An iridectomy may be done; this may be complete or it may only be necessary to pull a piece of the iris into the wound and leave it there. This case was evidently extreme and warranted enucleation of the eye ball.

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HUGH S. WHITE, M. D.
FRED C. LAMB, Analytical Chemist

DR. GOODRICH asked what is the etiology of glaucoma.

DR. BAKES said that the direct cause is interference with drainage from swelling of the ciliary body pressing upon the drainage spaces; others say that sympathetic nervous system is a direct cause; others attribute glaucoma to a normally short anterior-posterior diameter; one to two mm. short is supposed to predispose to glaucoma, in the opinion of some. In reply to Dr. Yandell's question, he said that the normal eye showed no cupping of the disc, the pupil was slightly dilated, the vision was clear. It may possibly have a tendency to glaucoma and may even develop it if not watched—and even if watched. Inflammatory glaucoma occurs in the aged; females are 65 per cent more likely to have it than males. He said he had not attempted to go into such detail in the discussion as would be expected in an ophthalmic section.

CASE II.

Case 1602, reported by DR. BROCKWAY, was an unmarried woman, teacher, age 20 years. Her history dated back to a previous operation, this past summer, during Dr. Brockway's absence from the city. She was first seen by Dr. Drane, in an attack of what was apparently acute appendicitis. She had always been well and was athletic. In July, she developed an acute pain in the upper right abdomen, which was later localized, in the right lower quadrant; she had nausea and vomiting. Diagnosis of acute appendicitis was made. She was sent to the hospital and was operated upon the next day. The surgeons, Drs. Beauchamp and Tuthill, reported that they found an appendix which questionably explained the symptoms. The abdomen and pelvis were searched for further pathology and none was found. The pathologist reported a sub-acute appendix. She had a very stormy course following the operation; the temperature ranged up to as high as 103.5 repeatedly; she ultimately, after some days, had none and was allowed to go home. Before long an attack of pain in her abdomen developed, with a chill and a rise of temperature. There was some drainage from the abdominal wall, even after she went home, and she returned to the doctor's office for attention to the wound. Dr. Brockway said that she presented herself in his office about three weeks ago, with a tumor mass, very readily outlined in the region of the lower middle abdomen. The mass was symmetrical, about five fingers above the pubes, and was nearly immobile. The patient was asked to empty her bladder but this in no wise changed the appearance of the mass. It resembled a pregnant

uterus of about four and a half months' size. Dr. Wiley was asked to see the patient, and he was convinced of a pregnancy. The possibility of this was denied. The cervix had no appearance of a pregnant uterus, the breasts were unchanged, and the patient had had normal menstruation. She had fever of 99.2. Dr. Brockway then sent her home and that day she had a temperature of 100.5. He concluded that she could not be pregnant and sent her to the hospital for further study, and possibly an operation. He introduced a probe into the uterus and found a normal cavity. She was operated upon the following morning. Adhesions were

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found which extended uniformly from the parietal peritoneum and the face of the tumor and to the intestines, and over about the pelvic walls. There was a very thick wall, inside of which was a purulent material; the mass extended downward into the pelvis toward the rectum; the inflammatory exudate was massive in all directions; the uterus was apparently against the rectum; the tubes and ovaries could not be outlined. The entire mass was removed. The pathologist's report said that there was dense fibrous tissue, apparently walls of an abscess; culture from pus was sterile. She had a slight temperature for a few days, and then made an uneventful recovery. She is still in the hospital but will be ready for discharge soon.

DR. DRANE said that he had seen this patient before and after the first operation. The attacks simulated diaphragmatic pleurisy, but there was no other sign of pleurisy.

DR. E. P. PALMER said he was reminded of three cases of chyle duct cysts which he had been fortunate enough to see. This history was almost typical of such a condition. These tumors grow rapidly and are extremely difficult to diagnose and they are also difficult to enucleate, and unless completely enucleated, they are apt to recur. They also produce a great deal of fever and pain. He would be inclined to believe that this was a chyle duct cyst.

DR. WATKINS suggested that it is recommended now that the uterine cavity be outlined with lipiodol. This may be done even in pregnancy without great danger of disturbing the pregnancy; however, it should be carefully done.

DR. GOODRICH said that he believed that a leucocyte count of over 18,000 was extremely rare in appendicitis and that, when a leucocyte count was higher than this, one should look, first, in the chest; second, in the liver; and third, in the pelvis.

DR. BROCKWAY remarked that, a few years ago, he was taken to the hospital with a ruptured appendix, and a leucocyte count of 28,000.

DR. WATKINS replied that, in the St. Joseph's hospital, 40 per cent of the cases of appendicitis had leucocyte count of over 20,000.

DR. FELCH said that his cases very generally had leucocyte count over 20,000.

DR. BROCKWAY, in closing, stated he wished to know what experience others had with chyle duct cysts. He said that he was very sorry that Dr. Beauchamp and Dr. Tuthill were not present to discuss this case. His own opinion has been that the condition was an abscess extending from

an infected appendiceal stump. There was no odor to the pus.

(Continued next month)

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Gonococcal Infection in the Male, by Abr. L. Wolbarst, M. D., Urologist and Director of Urologic Clinics, Beth Israel Hospital; Consulting Urologist, Central Islip State Hospital, Manhattan State Hospital, and Jewish Memorial Hospital, etc.: with a chapter written by J. E. R. McDonagh, F. R. C. S., Surgeon, London Lock Hospital, Late Hunterian Professor, Royal College of Surgeons, etc., London, England; with eighty-nine illustrations, including seven color plates; St. Louis; The C. V. Mosby Company; 1927, \$5.50. This book has been prepared with the idea that gonococcal infection is deserving of the most careful treatment, and that, since it is the general practitioner who discovers it in the beginning, it is he who should have a true understanding of the seriousness of the problems. The author deals with the subject in an elementary way and yet his discussion is comprehensive. The general practitioner, as well as the genito-urinary specialists, will wish to have this book. The illustrations are numerous and beautiful. O. H. B.

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Volume XI

DECEMBER, 1927

No. 12

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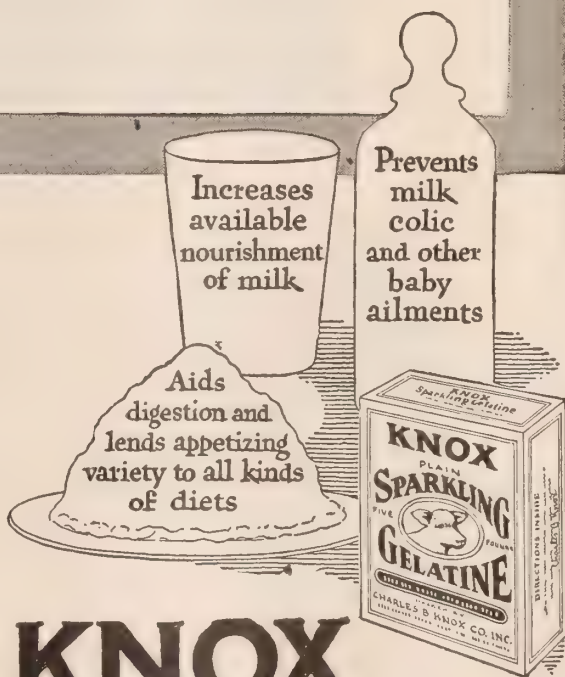
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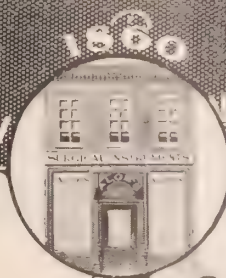
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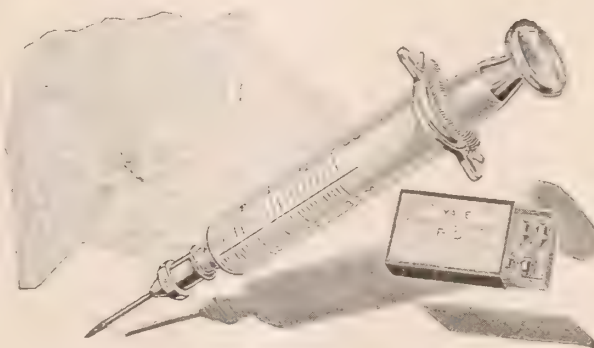
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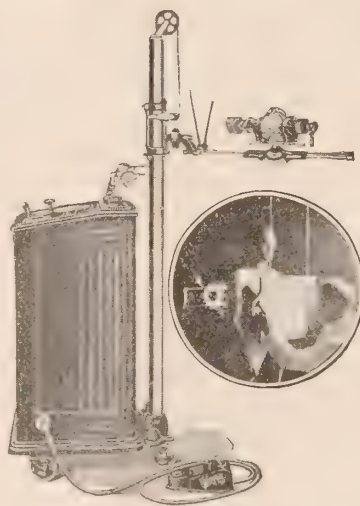
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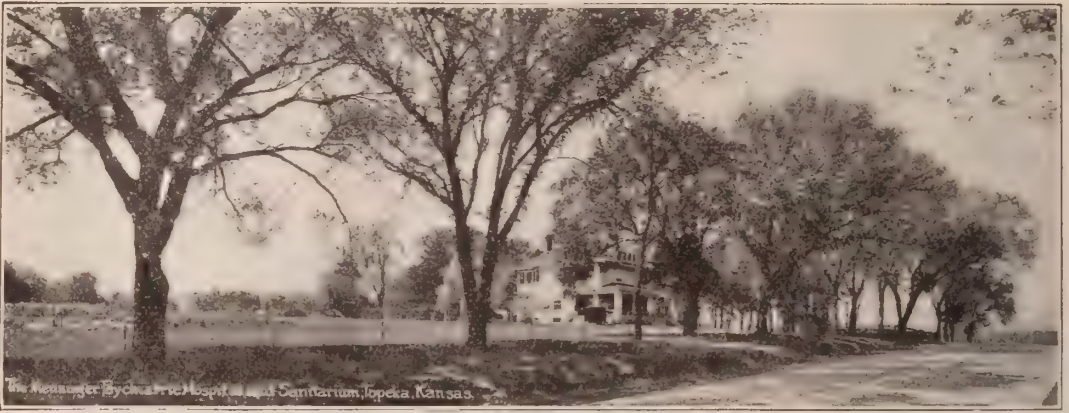
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POLIOMYELITIS

A Brief Resume of Epidemiology, Symptomatology and Treatment.

WILLIAM H. PARK, M. D., and
JOSEPHINE B. NEAL, M. D.,
New York.

Presented before the Medical and Surgical Association of the Southwest at their Clinical Congress and Annual Meeting, at El Paso, Texas, November 2 to 5, 1927.

During the summer of 1927, poliomyelitis has been unusually prevalent in the United States. The first outbreaks of serious proportions were in New Mexico, Texas and Southern California, late in June and early in July. These were of rather short duration. Later in July, a fairly large number of cases were reported in Ohio and a much smaller number in West Virginia. In Massachusetts, the number of cases increased rather rapidly in September. In August and September, there was a sharp increase in the cases in Northern California. The Public Health Report states that for fourteen weeks, from July 3 to October 8, 1927, reports from the state health officers show 5,227 cases of poliomyelitis as compared with 1,340 and 3,772 for the corresponding periods of 1926 and 1925 respectively.

This has focused our attention again on this disease. It may be worth while, therefore, to summarize briefly the more important points of our present knowledge of infantile paralysis.

It is comforting to realize that a territory badly infected one year is apt to have but little poliomyelitis during the next few years.

The past eleven years have not developed any outstanding facts. The appearance of epidemic encephalitis, formerly called lethargica and often erroneously called sleeping sickness, has added another disease with a

predilection for the central nervous system. The behavior of its virus affords many interesting points for comparison with that of poliomyelitis and, in a small percentage of cases, a very difficult point in differential diagnosis.

ETIOLOGY

It has been known since 1909, when Landsteiner and Popper produced experimental poliomyelitis in monkeys, that the disease is due to a virus present in the brain and spinal cord substance. Very soon after this, Flexner and Lewis, Landsteiner and Levaditi, and others, succeeded in transmitting the disease from monkey to monkey, and these same workers also proved that the virus was filtrable. The presence of this virus has also been demonstrated in the filtrate of the naso-pharyngeal washings and in washings from the trachea and from the intestines. For some time the tiny globoid bodies which passed fine filters, described by Flexner and Noguchi in 1914, were believed to be the specific etiological agent, but this work has failed to be corroborated and the discoverers of the globoid bodies at present express great doubt as to their significance. They are probably contaminations or organisms growing in symbiosis with the true viurs.

EPIDEMIOLOGY

Although a certain number of older children and adults develop poliomyelitis, it is essentially a disease of early childhood. In most epidemics about ninety per cent of cases occur in the first ten years of life, and the greatest incidence is usually in the second and third years. A somewhat larger number of males than females are attacked by the disease. With rare exceptions epidemics have occurred in the summer months.

AGE INCIDENCE OF THE THREE DISEASES
DURING 1926 IN NEW YORK CITY

Age	Cerebro Spinal		Epidemic Encephalitis		Poliomyelitis	
	Meningitis		or Lethargica		Total	
	C	D	C	D	C	D
0-4	88	59	47	24	59	15
5-9	21	15	17	8	25	3
10-14	8	3	25	11	11	7
15-19	10	8	24	14	6	3
20-24	12	5	30	14	3	1
25-29	5	4	27	22	2	1
30-34	5	3	22	10	1	0
35-39	8	5	20	14	0	0
40-44	3	3	19	12	1	1
45-49	2	2	16	13	1	1
50-54	3	3	17	13	0	0

From the large number of individuals who escape the disease, although intimately exposed to it by a patient in the family, we may assume that a large percentage of people have an immunity either natural or acquired by some process the action of which we do not certainly know. It does not seem reasonable to assume that all, or even a large proportion of these immune individuals, have suffered from a mild and unrecognized form of the disease. As only a small number of cases give a history of exposure, it is commonly accepted that the healthy carrier or the convalescent from an undiagnosed attack is the main source of infection. This will be taken up in detail later. In cases occurring in rural communities, the history is often obtained that the patient had been visited by or had visited someone in whose family a case had rather recently occurred, or had attended a country fair or some other large gathering of people a few days before the illness developed. It is obviously impossible to have a very definite idea of the incubation period, since the number of cases with histories of direct exposure is so small. Wickman stated that it was probably from three or four to ten days. From a study made by the Rockefeller Foundation under the direction of Dr. A. H. Doty, in New York City in the epidemic of 1916, it seemed probable that the incubation period was usually seven or eight days.

Investigations of epidemics have pretty well ruled out animals and insects as carriers of the virus. In a small epidemic in Cortland, New York, in 1925, investigated by Knapp, Godfrey and Aycock, it was shown that contaminated milk might be a factor in its spread. A number of persons supplied with raw milk by one in whose family a case had occurred, developed the disease, while families supplied by other distributors had none. This makes it important to look into the possibility of milk being a carrier of the infection.

SYMPTOMATOLOGY

In dealing with a disease the manifestations of which are so variable, both in extent and severity, as are those of poliomyelitis, any brief discussion of the symptoms must be more or less incomplete. The symptoms of poliomyelitis must be considered as divided into two phases: the first showing evidence of a general systemic infection; the second, that of the involvement, to a greater or less extent, of the central nervous system. A type of onset described by Kling, Levaditi and others, remarked upon in the Study of Poliomyelitis by the Meningitis Division of the Research Laboratory of the City Health Department, in 1917, and emphasized by Draper in his "dromedary" type, is that in which the initial symptoms (usually of a gastro-intestinal or anginal nature with fever) are followed by a remission of several days, after which there is an exacerbation of these symptoms, usually with paralysis developing immediately. From our experience and from a study of the literature, we believe that this type of onset is usually less common than that in which the symptoms progress without pronounced remissions. In a still smaller group of cases the onset is insidious. Usually, however, it is abrupt.

Fever is the most constant as well as the first symptom. As a rule, it is fairly high and of comparatively short duration. Next to fever, the most frequent symptom is hyperesthesia, or diffuse tenderness, over the whole body, more marked, perhaps, along the spine and in the legs. Usually there is a decided drowsiness and the patient manifests great irritability when disturbed. There is often profuse sweating. Headache, vomiting and constipation or diarrhea, are common symptoms. Occasionally there may be retention of urine in the more severe cases. Convulsions are not especially common. Muscular twitchings, or tremor, occur quite often. Delirium is rather rare. In some epidemics an erythema has been observed in a certain proportion of cases. Sensory disturbances, other than the hyperesthesia already noted, are extremely rare.

While certain of these symptoms may well be due to involvement of the central nervous system, within the first twenty-four to forty-eight hours, there is usually additional evidence by more or less well-marked signs of meningeal irritation. These are: a certain degree of antero-posterior stiffness of the neck, Kernig's sign or the spinal sign (pain on anterior flexion of the spine) and a positive Macewen's sign. Other indications that the central nervous sys-

tem is being attacked, may be ascertained by the examination of the reflexes. Very early, the tendon reflexes are likely to be exaggerated and the superficial reflexes are normal or active. As the disease progresses, however, the tendon reflexes are usually diminished, or lost, and they are frequently unequal. A diminution or loss of a reflex is often, but not invariably, an indication of an approaching paralysis. The superficial reflexes of the trunk are retained unless there is a paralysis of the back or abdomen.

If the lesion of the central nervous system goes on to paralysis, this usually makes its appearance within three to four days. Of course this period is longer in the type of case in which there is a stage of remission. But, in this type, the paralysis usually appears quite promptly after the exacerbation of symptoms.

Much attention has been devoted to an attempt to classify the disease into types. Wickman described eight types on both a clinical and a pathologic basis. From a study of the cases in the epidemic of 1916, we suggested a classification based on the anatomical location and the degree of the lesion.

Nonparalytic Type. Under this head are included cases in which the nerve cells are not sufficiently injured to produce paralysis. There may be weakness. Under this type should be classed meningitis cases and also those cases somewhat like tuberculous meningitis, but without motor disturbance, which we have called encephalitic, since the chief symptom seemed to be a depression of the sensorium. This is really only an accentuation of the drowsiness and stupor characteristic of the early stages. In these cases the motor cortical areas are not involved.

Ataxic Type. The motor nerve cells are evidently not involved, but there is lack of coordination, ataxia, nystagmus, etc. In some cases an ataxic gait is the only sign of involvement of the central nervous system other than the sensory symptoms. The anatomic basis for this, proved by the post-mortem findings of involvement of the cerebellum, Clark's column and the intervertebral ganglia. This type is very rare.

Type with Cortical or Upper Motor Neuron Paralysis. The upper motor neuron is affected, with resulting paralysis. A true spastic paralysis is rare. More often are seen evidences of involvement of the upper motor neuron, increase of reflexes, or severe and prolonged convulsions. These convulsions are general and epileptic in character and may last for several hours.

Type with Spinal or Subcortical Paralysis. The lower motor neuron is affected, with resulting flaccid paralysis. This is, of course, the most common form and the one first recognized and described. This type includes the rapidly ascending type resembling Landry's paralysis and those cases with bulbar paralysis.

In recent years much discussion has centered about the question of the percentage of cases in which the disease does not progress beyond the systemic phase or, at most, beyond the stage of meningeal irritation. Some authorities place this number as high as seventy-five or eighty per cent.; the more conservative, at perhaps twenty-five to thirty per cent. It is a question that it will be difficult to decide. Probably the higher percentage is the more nearly correct.

Poliomyelitis comes at a season when acute gastro-intestinal disturbances are common and it attacks, especially, children of an age when such disturbances are most prone to appear. Many children with gastro-enteritis show quite marked signs of meningeal irritation. On lumbar puncture, the spinal fluid is increased and, if convulsions have been present, there may be an increase in the cells or proteins or both, so that an examination of the spinal fluid, while it would help, would not decide the diagnosis.

The examination of the spinal fluid is the most valuable laboratory aid in the diagnosis of poliomyelitis, but even here there are no pathognomonic findings, as, for example, the infecting organism in a purulent or a tuberculous meningitis. It is by ruling out other conditions that it is of most value, and it is of the greatest service only when correlated with a careful clinical study of the case.

The spinal fluid in poliomyelitis is usually increased in amount and escapes under pressure. It is clear or slightly hazy in appearance, and sometimes shows the fibrin web formation which was formerly considered pathognomonic of tuberculous meningitis.

In poliomyelitis, the spinal fluid shows evidence of an inflammatory reaction—there is a varying increase in the cells and in the albumin and globulin. In a few cases, these evidences of an inflammatory reaction are well marked; in most cases, they are moderate; while, in a few cases at the other extreme, they are so slight and the fluid so nearly approaches normal that it is difficult to make a definite statement in regard to the findings.

The cell count ranges from a slight increase to 1000 or more. These high counts

are rare. So also are counts of ten or less. The usual count runs from fifteen or twenty to 100. Much depends on the stage of the disease at which the puncture is done. The counts tend to fall off rather rapidly after the first week and are usually nearly normal by the end of the second week. It has been stated that, very early, the cells are polymorphonuclear, and that these are replaced later by mononuclears. This was not our experience in 1916, when we had the opportunity of examining many fluids in the early stages. We found, at that time, a few fluids (thirty-nine out of a series of 2000) in which polymorphonuclears predominated. These fluids were obtained at different stages of the disease, so we were inclined to believe that the polymorphonuclears represented an unusual type of meningeal reaction—not a stage of the disease.

The protein is slightly to moderately above normal. The increases in protein and cells do not necessarily run parallel. The protein increase usually remains somewhat longer than does the increase in cells.

The sugar in the spinal fluid of poliomyelitis is normal or high. It may be more than 100 mg. per 100 c. c. and is frequently above eighty. This point should be emphasized, as certain workers have called attention to the high sugar that not infrequently is found in the fluids of epidemic encephalitis, and have considered it a diagnostic point.

The chlorides in the fluids of poliomyelitis, run from slightly below normal to somewhat above normal and seem to have no significance. The blood in poliomyelitis shows a moderate leucocytosis and polynucleosis.

PROGNOSIS AND MORTALITY

The prognosis must be considered from the standpoint both of life and disability.

The mortality varies greatly in different epidemics and the figures given are probably always too high on account of the mild cases that are not diagnosed. In New York, in 1916, the mortality was extremely high—twenty-seven per cent. It is usually given as ten to fifteen per cent. The mortality is particularly high in the first two years of life among adults. Most cases resulting fatally die during the first week of the disease. While those cases with bulbar paralysis constitute the vast majority of the fatal cases, patients developing such paralysis are by no means to be considered as having a hopeless prognosis. Many of them make perfectly good recoveries. These have been noted in a number of instances in the present and past in New York City.

It is generally accepted that the most common cause of death is respiratory fail-

ure, due to the progressive paralysis of the muscles of respiration. The question of death occurring as a result of respiratory failure, or of cardiac failure, due to the respiratory or cardiac centers being involved, has received but little consideration. Wickman, referring to the occasional occurrence of Cheyne-Stokes respiration, says that it is undoubtedly due to the respiratory center being affected. He also mentions the possibility of the involvement of the vagus. Realizing that this question lies, to a great extent, in the realm of speculation, certain observations point to the desirability of giving it serious consideration. It is certainly possible to conceive from the pathologic findings that this condition may exist. Cases occur in which the only lesions are in the bulb and pons, there being no involvement of the cervical regions of the cord, where the nerves controlling the muscles of respiration take their origin.

During the epidemic, death occurred suddenly, without signs of cardiac failure, in a few cases in which there was no paralysis of the muscles of respiration. In one case death occurred without evidence of paralysis, evidently from cardiac disturbance. For twenty-four hours preceding death there had been intervals of great irregularity of the heart, though the heart itself, from the physical examination, was apparently normal. Such a condition might conceivably arise from a progressive involvement of the vagus center in the medulla.

In several instances there was evidence of a transient involvement of the cardiac or respiratory centers, as shown by marked irregularity of the heart or respiration, which cleared up completely.

As regards disability, it is obvious that many patients belong to the non-paralytic group. These make perfect recoveries. In other cases there is a transient weakness or paralysis, due, probably, to an edema around the cells, which clears up promptly and completely. In the cases with paralysis, proper orthopedic treatment often brings about surprisingly good results even when the paralysis is extensive.

Aside from muscular disability, poliomyelitis is apparently very free from after effects. The virus does its worst in a few days—dies out completely, and any further change is toward recovery. Its action is in striking contrast to that of epidemic encephalitis, which acts, as a rule, slowly, gradually involving different parts of the central nervous system, is apparently quiescent for months or years, and then becomes again active.

TREATMENT

Prophylaxis—Since it is accepted that poliomyelitis is spread largely by human contact, the isolation of the patient is important. It would be desirable also, as far as possible, to isolate contacts as well. Since the virus is known to exist in the nasopharyngeal secretions and in the discharges from the bowel, measures should be taken to dispose of these secretions and also to avoid contamination by them. Amoss and Taylor have shown that neutralizing bodies are found in the nasopharyngeal secretions. It is, therefore, at present doubtful whether it is better to use nasal irrigations and gargles of normal saline, or to use antiseptics which, while acting more effectually on the virus, may have a deleterious effect on these secretions. This is a suitable subject for careful investigation. Some of the newer dyes, while destructive to micro-organisms, seem to have little, if any, deleterious effect on the mucous membranes.

General—During the acute stage general symptomatic treatment should be employed, with complete rest. The relief of the increased intracranial pressure, by lumbar puncture, is practically always of therapeutic value. Sometimes a single puncture is sufficient but it should be repeated whenever there are signs of meningeal irritation or increased intracranial pressure. If paralysis develops, the paralyzed muscles should be adequately supported by pads, splints or other devices, until all tenderness or other indications of inflammation have disappeared. The patient should then be placed in the hands of a competent orthopedist.

Specific—The use of serum, either from convalescent patients or from horses immunized by organisms supposed to be the cause of the disease or with the brain substance of monkeys killed while having the disease, has been more or less widely advocated. As regards the use of serum from horses immunized against the strain of streptococci isolated by Rosenow, the results, to say the least, are doubtful. Since the etiological agent is accepted by most authorities as being unknown, it is difficult to see how any specific action could be expected. It is used very little in New York.

At a symposium on poliomyelitis, a little more than a year ago, Amoss stated that the horse sera, from horses so treated, that he had tested did not have the power of neutralizing the virus. Hence their use appears to have no scientific foundation.

The immune human serum has been recommended for use both intraspinally and intravenously. Some years ago the empha-

sis was laid on the intraspinal injections. In the minds of the general public, and of many physicians, there exists a close analogy between the use of serum in epidemic meningitis and in poliomyelitis, and its success in the former has influenced them to have faith in its success in the latter.

The pathology of the two conditions, however, is quite different. In acute purulent meningitis, the process is limited almost entirely to the meninges, the brain and cord substance being little, if at all, involved, though there may be some secondary congestion. In poliomyelitis, however, the pathologic picture is reversed. Here, the brain and cord substance is mainly involved, whereas the inflammation in the meninges is secondary. Injecting a foreign substance into the slightly inflamed meninges sets up, in many cases, an acute aseptic meningitis, as is shown by changes in the spinal fluid, and clinically, by the increased temperature, rigidity of the neck and other signs of meningeal irritation. It is possible, but hardly probable, that this increased inflammatory reaction may tend to accentuate, indirectly, the inflammatory changes already existing in the subjacent substance of the brain and cord.

In certain cases that we observed, we thought that such a harmful reaction did take place—but it may have been due to the antiseptic or hemoglobin in the serum. Our opinion was further borne out by animal experiments performed by Abramson. He found that monkeys treated by intraspinal injections of convalescent human serum. On the other hand, we have had the control monkeys, which received no serum. On the other hand, we have had the opposite impression in many cases, and it is the belief of many that good results follow the use of serum.

The value of the intravenous injections of convalescent serum appeals to us more strongly, but we must still consider it an open question. To be of value, it is commonly conceded, the serum must be used in the pre-paralytic stage. It is recognized that the diagnosis at this stage is extremely difficult. Therefore, until a large series of cases is treated, with at least a nearly equally large number of untreated cases as controls, in some epidemic, the question must remain in doubt. Reports of the results of the serum in a few individual cases, mean very little. Many apparently severe cases of poliomyelitis often make surprisingly good recoveries when only lumbar puncture is used. Unfortunately, there is not the same tendency to publish the results of these recoveries as there is to pub-

lish those in which some supposedly specific treatment was used.

In a personal communication to me, Rose-nau of Harvard University told of the very recent apparent success of Aycock in the first fifty cases of early poliomyelitis treated by giving, on the first day, 15 c. c. of convalescent serum intraspinally and 30 c.c. intravenously, and on the second day, 15 c.c. intraspinally. Only two of the fifty cases developed paralysis.

Zingher, however, working with me in 1916, had almost equally good results with intraspinal injection in the preparalytic cases. At the Willard Parker Hospital, he treated twenty-five cases in the preparalytic state, and only one developed paralysis. He treated similarly eighty-eight cases that had developed paralysis. Eighteen died during the first twenty-four hours; nine, within forty-eight hours; and five, later—a total of thirty-two deaths among eighty-eight cases, or, rather, eighty-two, for six other cases died of complications such as pneumonia.

As a control, he injected ten preparalytic cases with normal horse serum. One developed bulbar symptoms within twelve hours and died shortly afterward; the others recovered without developing paralysis.

At a private hospital on the health department grounds, he injected fifteen additional preparalytic cases. Nine remained free from paralysis, two developed paralysis within twenty-four hours, and four later. Four of the six completely recovered.

He injected, for other physicians, fourteen preparalytic cases. Eleven remained free from paralysis; three developed paralysis. Two completely recovered.

In all, Zingher treated fifty-four preparalytic cases. The majority received two doses of serum intraspinally. Forty-four recovered without developing paralysis. Of the remaining ten, none died, and in only four of the fifty-four did paralysis remain. Zingher concludes his report with the following comment: "It is known that in poliomyelitis we have a group of abortive non-paralytic cases, in patients who go through the premonitory symptoms but do not develop paralysis. It is difficult to state, therefore, how many of the patients would have remained free from paralysis without the serum treatment. Conclusions based on any form of treatment, in a disease which is so variable in symptomatology and in prognosis, both as to life and disability, must be given with reserve. It seems to me, however, that the action of the convalescent serum in poliomyelitis, is beneficial." "When carefully observed and controlled,

the treatment is harmless. In the more severe cases, in which paralysis is developing, the value of the serum is more doubtful; but even here we should continue to use it, hoping, in the course of time, to obtain more definite results."

We are now immunizing a horse with the virus from the brains of monkeys. As you know, the monkey is the only kind of animal that develops poliomyelitis after experimental infection. The serum already has protective substances in it and we expect to use it on my return, both intravenously and intraspinally. We will first try its therapeutic value in monkeys. I am looking forward with interest, but hardly with expectation that the results of its use will be definitely favorable.

Let us consider, briefly, the presence of the microbe of infantile paralysis in human beings—the sick, the convalescent, and healthy contacts.

In December, 1908, Landsteiner and Popper communicated the fact that they had succeeded in transferring poliomyelitis from human beings to monkeys. This opened up a way for testing for the presence of the virus, even though we did not know the organism itself.

Flexner proved that the virus was in the mucous membranes by cutting out a piece from the nasal mucous membrane of a monkey recently dead of poliomyelitis and producing the disease with it in another. The tonsillar tissues also produced the disease. Attempts to produce the disease with washings from the respiratory and intestinal mucous membranes, however, failed, and the question was in doubt as to whether the mouth and intestinal secretions were infectious.

During some of the epidemics of infantile paralysis, observations have been made that gastro-intestinal disturbances occur in children, not only during the epidemic, but before any cases of paralysis appear. There is considerable possibility that these symptoms are due to an infection of the intestinal mucous membrane with the virus.

In 1911, Kling, Pettersson and Wernstedt made a remarkable study of the nasal, tracheal and intestinal secretions of persons dying of poliomyelitis, of those sick of the disease, and of those in contact with persons sick of the disease. They were able to infect monkeys with the secretions from each of these classes and, more striking still, they found, in many of the convalescents and infected carriers, that the virus persisted for two or even three months. If this work is reliable, and there seems to be no doubt that it is, the decision as to when

isolation should be terminated becomes a very difficult one. It would seem as if our present period of quarantine is too short.

THE POSSIBILITY OF USING A VACCINE

In 1910, Flexner and Lewis tried giving monkeys gradually increasing subcutaneous doses of the virulent virus from the brains of monkeys. Some developed immunity to the disease but others became infected with poliomyelitis.

Landsteiner and Levaditi, at about the same time, utilized the Pasteur method developed for the attenuation of the rabies virus and with some success; but here, also, a few monkeys developed poliomyelitis.

In 1911, we tried, in the Health Department laboratory, a modified Pasteur method. The virus in the first and second injections was heated for thirty minutes at 55°C, the virus for the third injection was heated at 75°C, that for the fourth at 37°C, and the fifth left unheated.

We treated eight monkeys and all withstood the vaccine safely. When their immunity was tested, five resisted infection from brain injections of virulent virus and three, while moderately resistant, finally developed poliomyelitis. The serum of each, protected monkeys when it was mixed with a multiple fatal dose of the active virus and given intracerebrally. Fearing that this might not be absolutely safe, we tried the Semple method which we now use for the Pasteur treatment. The virus was heated to 55° C/131F, for thirty minutes and to each monkey injections were given. One-third of the treated monkeys were protected against the brain injection. Their serum neutralized the virus. The serum of the others was more or less weak in antibodies as shown by only delaying the illness. This vaccine, however, is absolutely safe and could be given to children where parents are greatly worried about possible infection of their children.

PRESENT STATUS OF PNEUMOPERITONEUM AS AN AID IN THE RADIOLOGICAL DIAGNOSIS OF ABDOMINAL LESIONS. *

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The introduction of air into the abdominal cavity as an aid in the radiological examination of the intra-abdominal organs is

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now a well established procedure. Immediately following its introduction into this country by Stein and Stewart¹, of New York, it was taken up with great enthusiasm and comprehensive studies were made of its various aspects; chiefly by Orndorff,² Alvarez,³ Van Zwaluwenburg and Pedersen,⁴ Tierney,⁵ Case⁶ and Rubin.⁷ The method of examination was just becoming firmly established when Case⁸ (1921), after an exhaustive study from many sources, related certain dangers connected with the method and collected from the literature reports of four deaths as directly attributable to the induction of pneumoperitoneum. All were from air embolism. As a result of this adverse criticism, enthusiasm waned and this valuable method of diagnosis suffered a severe set-back.

During the past eight years we have performed pneumoperitoneum on well over 1000 patients for x-ray examination, without any untoward or serious complication. With the exception of those performed by the radiologist or his assistant, not more than three were performed by any one interne, which would indicate that the procedure as carried out is relatively safe. We regard the method as safer than thoracentesis and feel that an analysis of a large number of thoracentesis operations would net a greater number of accidents than as many instances of pneumoperitoneum.

Proper care in the introduction of air is, of course, necessary. We have developed a very simple apparatus* and have outlined a simple technic for the introduction of pneumoperitoneum which has given uniform satisfaction.⁹ The evening before the examination the patient should receive a cathartic, preferably castor oil; the next morning the bowels should be thoroughly cleansed with an S.S. enema. Only a light breakfast should be allowed and, about twenty to thirty minutes before examination, the patient should be caused to void, or should be catheterized, and one-sixth grain of morphine should be administered hypodermically. The operator should scrub with soap and running water for fifteen minutes and should make the same preparation as is customary for a laparotomy. The apparatus consists of an air pump—similar to the pump of a Potain aspirator—attached by suitable rubber tubing and metal connectors to a lumbar puncture needle with a glass trap interposed to prevent the introduction of oil or any foreign

*This simple apparatus here described may be readily assembled or may be had from Becton-Dickinson and Co.

material from the pump. The needle and connecting apparatus should be boiled; the pump need not be sterilized.

A point in the left lower quadrant of the abdomen, one inch to the left and one inch below the umbilicus, is selected for introduction of the needle, since at this point there is less danger of injury to underlying structures. Before introducing the needle, palpate to exclude the presence of any mass or unusual pulsation in this location. The first step is to introduce the needle through the skin; second, with the index finger on the hilt, and the needle perpendicular to the abdominal wall, exert firm but steady pressure until the structures give way before the point; this impulse is usually felt twice, once as the needle traverses the fascia and again as it pierces the peritoneum. Remove the stilet and wait for a few moments to be sure that no blood exudes from the needle; never manipulate the needle in the abdominal cavity without the stilet in place. Connect the pump and proceed with inflation. If the needle is in the abdominal cavity, the inrush of air with each stroke of the pump will be heard through a stethoscope at some remote portion of the abdomen. If this sound is heard, certain that you are not in, and the stilet should be reinserted and the procedure tried again. The insertion of a few pumps of air into the subcutaneous tissues never does any damage since the air is absorbed within a few days. Inflation is continued under fluoroscopic vision and is carried to a point where the anterior abdominal wall lifts away from the underlying abdominal organs. When the proper degree of distention is acquired, the needle is withdrawn and the examination proceeded with. The air, being lighter than the abdominal organs, rises to the top; therefore any organ to be examined must be uppermost so that it will be enveloped by air in order that its outline can be seen.

It is necessary, therefore to place the patient in many positions in order to examine all of the abdominal organs.¹⁰ Lying on his back, the ray traversing his body from side to side will show clearly any adhesions between the abdominal wall and underlying structures; rolled up on his side, will show clearly the right kidney and liver, on the right side and the left kidney and spleen at the left; the prone position with pressure on the abdomen pushes the air out about all of the abdominal organs and gives a general view of all abdominal viscera, disclosing the pelvic organs when directed at the proper angle; side to side ex-

amination with the patient lying on his face, thighs and chest supported by blocks which allow the abdomen to sag suspended between them, gives a clear view of the retroperitoneal structures and determines the retroperitoneal origin of a mass.⁹

Pneumoperitoneum, like all other methods of examination, was at first hailed as an agent capable of making a diagnosis in all types of abdominal pathology. Like all other new methods, it was soon found to have definite indication and likewise definite limitations. We feel that the principal uses of the method may be briefly summarized as follows:

1. To determine the presence, position, size and outline, mobility or attachments of any abdominal organ.^{3, 5, 10}

At times it is desired to determine the actual presence of an organ; kidney, for instance. The position of an organ may be in question; for instance, the spleen has been found dislocated in the pelvis giving rise to an erroneous diagnosis of tumor. The size and outline of an organ may give some clue to the underlying pathology; the nodular appearance of the liver border or of kidney is usually indicative of new growth; irregular fibrotic appearance of the spleen occurs in tuberculosis, etc. The mobility may at times be judged by this examination; mobility of a kidney may be directly visualized. Attachments of an organ, either normal or those due to adhesions, are usually made out.

2. To determine the presence, position, size or outline, mobility and attachment, of any abdominal mass.^{3, 5, 10}

It is often very important to the surgeon to have some indication of the origin and character of a tumor before operation. Often this knowledge has proven especially efficacious in determining the retroperitoneal character of a mass.

3. The detection of adhesions. Pneumoperitoneum is the only method by which adhesions, post-operative, inflammatory or from whatever cause, can be detected, unless they cause obstruction.^{3, 5, 10}

4. For outlining the diaphragm and exploring the subdiaphragmatic space.¹⁵ This method has been found very useful in detecting sub-diaphragmatic abscess or adhesion of the liver or spleen to the diaphragm. It is equally efficacious in outlining the diaphragm and should give the deciding information in diagnosis of diaphragmatic hernia or eventration of the diaphragm.

5. Pleumoperitoneum examination of the pelvic organs has been developed to a high degree by many gynecological clinics¹¹; and has proven a most beneficial adjunct to the other existing methods of diagnosis.

While pneumoperitoneum has proven of some value in the diagnosis of lesions of the gastro-intestinal tract¹² in certain selected cases, it has in no way displaced the ordinary established methods of examination by barium meal. It is of little value in demonstrating tumors in the upper abdominal quadrants—those of the stomach and pancreas, for instance. Its usefulness in diagnosis of gall-bladder disease has given place to the much more exact method of Graham after intravenous injection of tetraiodophenolphthalein. It is of little value in urinary tract diagnosis¹³, other than to show tumors of the kidney or to establish the relationship of a mass to the kidney. It will not disclose diseases of the kidney pelvis or bladder with the same degree of accuracy as the methods of pyelography and cystography after injection of opaque material—methods now in general use.

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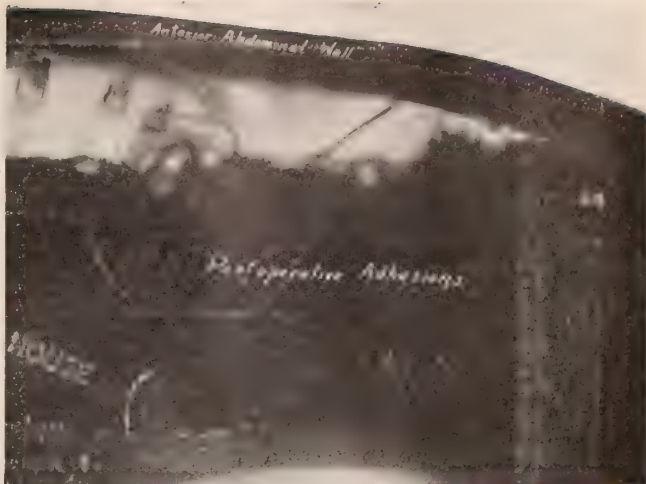


Fig. 2. Pneumoperitoneum will show adhesions between the abdominal wall and the underlying viscera, whether from infection, post-operative or malignant. Such adhesions cannot be demonstrated by any other means. In this instance the patient is lying on his back and is viewed from side to side. The anterior abdominal wall is lifted away from the underlying viscera; adhesions between the intestines and a post-operative abdominal scar are clearly shown.

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11. Idem: *Pneumoperitoneum as an Aid in Diagnosis of Lesions of the Urinary Tract*; *J.A.M.A.* Sept. 24, 1921, Vol. 77, p. 982.
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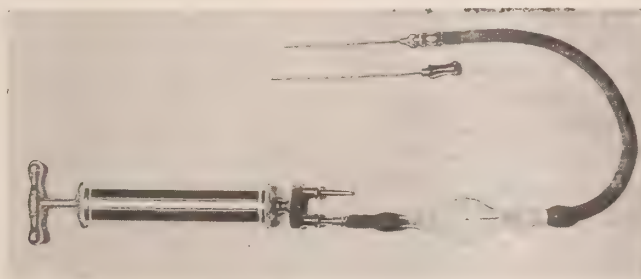


Fig. 1. Apparatus used for production of pneumoperitoneum. An ordinary lumbar puncture needle fitted to the pump of a Potain aspirator by suitable rubber tubing and connectors, with a rectal drip tube interposed as a trap (vent-hole plugged). This apparatus is a somewhat more compact and simpler form, is manufactured by Becton-Dickinson and Co.



Fig. 3. To show the spleen and left kidney, the patient must be rolled upon the right side with the left side uppermost. The air rises to the top and envelopes the spleen and shows the subdiaphragmatic space. In this instance the spleen is greatly enlarged and is adherent to the diaphragmatic surface. Pneumoperitoneum should always be performed to ascertain whether such a condition exists, before the operation for splenectomy is undertaken.

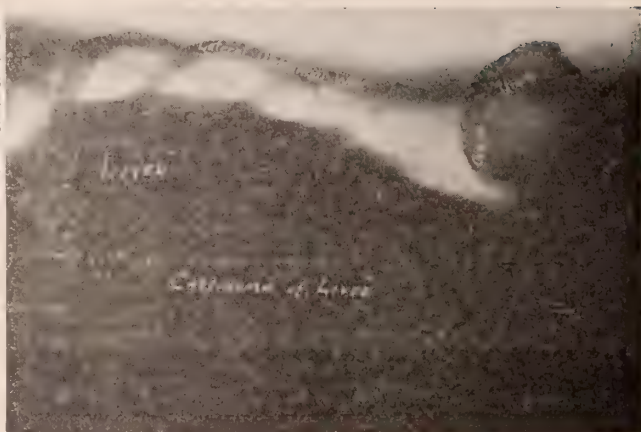


Fig. 5. If the liver is the site of carcinoma, the irregular nodules show distinctly on the liver outline. Position same as fig. 4.



Fig. 4. In order to show the liver and right kidney, the patient must be rolled upon his left side. The right side, being uppermost, is enveloped by air. The liver drops downward to the middle, giving a clear view of the right kidney. In this instance both liver and kidney are normal.



Fig. 6. Marked enlargement of the spleen from septicemia.



Fig. 7. Splenomegaly from splenomyelogenous leukemia.

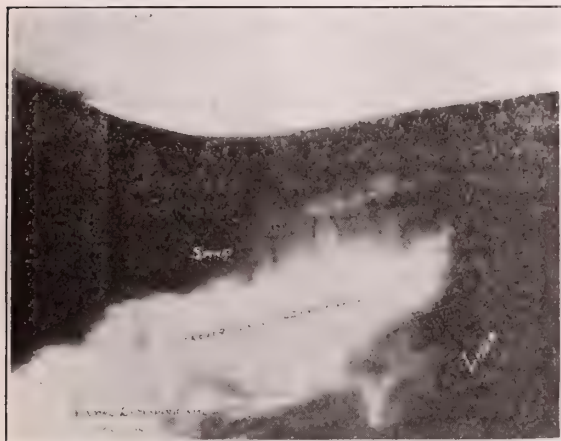


Fig. 9. The anteroposterior view gives a good idea of the relationship of the various organs to each other and to any mass which may be present. Nothing abnormal is noted in this instance.

Fig. 8. The retroperitoneal space can be investigated by placing the patient in the retroperitoneal position—lying on abdomen, chest and thighs supported by two blocks which permit the abdomen to hang loosely. In this position the stomach, intestines and all organs with mesenteric attachment, drop forward to the abdominal wall, leaving the retroperitoneal space clearly visible and creating a “prevertebral clear space” which makes any pathological process clearly visible. In this instance no pathology is present.

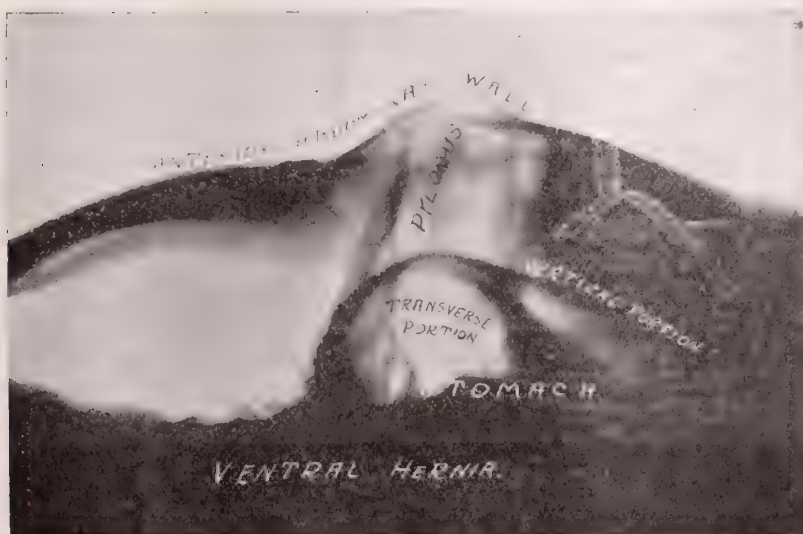


Fig. 10. This method may be used to great advantage in ascertaining the contents of abdominal hernias. In this instance, the stomach was also inflated with gas so that its outline could be clearly made out. It will be seen that the pyloric end of the stomach extended into the hernial sac.

DIFFERENTIATION OF TUBERCULOSIS AND BRONCHIECTASIS

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Read at the twelfth Annual Meeting of the Medical & Surgical Association of the Southwest, held at Tucson, Ariz., November, 1926.)

It should be unnecessary to discuss this subject, but it is a common observation in the experience of any clinician who sees many patients with lung disease, that bronchiectasis is still being diagnosed tuberculosis with almost inexcusable frequency. Inasmuch as the treatments of the two conditions are very different, differentiation is a matter of considerable importance to the patient, and justifies any time and effort that may be demanded of us. The tuberculous patient requires bed rest, in the expectation of arresting activity, this to be followed by carefully graduated building regime. The bronchiectatic patient, on the contrary, may be allowed, if he does not actually require, physical activity. In many other respects the treatment of the two conditions will differ.

Even though the clinical history, the physical signs, the x-ray appearances and the laboratory findings are all quite different in the two conditions, when they exist in uncomplicated form, yet careful analysis of any considerable group of supposedly tuberculous patients will find a few who have uncomplicated bronchiectasis, and more who have bronchiectasis as the chief pathological factor along with tuberculosis as a minor factor.

These errors are due to superficiality in history taking, in examination, or wrongful interpretation of physical signs or radiographic evidence. In many tuberculous lungs, of course, bronchiectatic changes develop, as the fibrosis of the tuberculous infection produces the cylindrical enlargement of bronchi or saccular lesions of bronchiectasis. Here it becomes a matter of fine clinical judgment to determine which factor is the more important and treat the patient accordingly.

The object of this paper is to recall to mind the pathology of bronchiectasis in its different stages, and to illustrate the value of iodized oil injections in the x-ray study of these changes.

When a patient gives a history of whooping-cough or pneumonia, with chronic cough and expectoration persisting through the years following, but with maintenance of good general health, weight and strength, tuberculosis should not be the first thought; certainly, bronchiectasis must be excluded

on such a history. With the sputum persistently negative for tubercle bacilli, with the physical signs confined to the bases and with the radiographic evidence of parenchymatous involvement of the upper lobes lacking, tuberculosis is, for all practical purposes ruled out.

It must be remembered that cough and expectoration do not need to be continuous in bronchiectasis. Bronchiectatic patients may have long periods of entire freedom from symptoms, so that the clinician is frequently misled by the history of a patient who states that he had a cough a year ago, but it disappeared and has recently returned following an acute respiratory infection. Also, absence of free expectoration at the time of examination does not exclude bronchiectasis. In the various manifestations of the bronchiectatic infection, the patient may have hemoptysis, dyspnea, fever, loss of weight, and the symptoms usually shown by the tuberculous individual. So, in many cases, the accessory methods of diagnosis become of undoubted value.

Until recently the radiographic evidences have been unsatisfactory in determining the presence or absence of bronchiectasis. Dr. A. B. Moore of the Mayo Clinic, has made extensive studies in the x-ray findings in bronchiectasis and radiologists generally have followed his interpretations. However, in 1924, reports began to appear in the foreign literature about the use of iodized oil injected into the bronchi as a means of definitely delineating the bronchiectatic lesions. This was not the first report on the use of opaque substances in diagnosing lung lesions, but it is the first method which has become at all popular. Armand de Lille and co-workers reported the use of lipiodol in the latter part of 1923, and made several other reports during 1924, one of these being in American literature. The first use of the method in Arizona, so far as reported, was by Dr. R. J. Callander of Tucson, who read a paper at the Arizona State Medical Association, in April, 1925, with several illustrative cases in whom iodized oil had been used in diagnosing bronchiectasis. Dr. Callander used the intra-tracheal method, which requires the assistance of a laryngologist. The technic has been much simplified by the introduction of the supraglottic method, the chief exponent of which is Dr. Stuart Pritchard of Battle Creek, who has used it on hundreds of cases. The supraglottic method of introducing iodized oil into the bronchial tree is absurdly simple and causes surprisingly little disturbance. Its technic has been described by Dr. Pritchard in several publications, but may be

briefly repeated here for the sake of those who do not recall it:

With the patient sitting and leaning slightly toward the side to be injected, the tongue is held forward by the patient. The throat is anesthetized with cocaine or butyn (two per cent solution), going over any portion of the throat which is likely to



Normal Bronchial Tree

Figure 1. (Ref. by Dr. H. K. Beauchamp.) Suspected of having bronchiectasis or lung abscess on the right side. This is an oblique view after injection of 20 c.c. lipiodol which entered both sides. The bronchi show the normal tapering outlines. The tracheal rings are shown, which is unusual.

be touched by the nozzle of injecting syringe, paying special attention to the anterior pillars, the uvula and the lingual tonsil region; a final application is made to the epiglottis and larynx by using a curved nozzle attached to a small syringe and, while the patient is inhaling, injecting a sudden spray of about one c.c. into the larynx. After a few minutes' wait, the iodized oil can be introduced by allowing it to flow out of the tip of a curved nozzle attached to a thirty c.c. syringe. If the tip of nozzle is introduced past the root of the tongue, and the patient is instructed to continue breathing and not to swallow, the epiglottis will remain open and the esophagus closed. Gravity will direct the oil into the larynx and into the most dependent bronchus. About forty-five seconds is usually required to introduce twenty c.c. of oil, which is sufficient to outline the lower bronchial tree of one lung. If it is desired to outline the bronchial tree of the other lung, an additional twenty c.c. may be immediately introduced into the other side, by having the patient lean slightly in the opposite direction.

Practically the only difficulty encountered is in the psychic reaction of a patient who is convinced that he is going to gag or cough. By a little persuasion and by touching the anesthetized throat to convince him that this may be done without pro-

ducing a tendency to cough or gag, nine patients out of ten will take the oil without coughing, gagging or swallowing, and will control the cough, after the oil is introduced, until fluoroscopic and radiographic work is finished.

There are three stages in the development of bronchiectasis. The characteristic x-ray densities of these three types, as shown by the plain radiographs, have been described by Dr. Moore. We desire, here, by using illustrative patients in whom the bronchial trees are outlined with lipiodol, to review these three stages of bronchiectasis, and show the value of this relatively new method of diagnosis.

In Fig. 1 is shown outline of the trachea and larger bronchi. The normal difference in the angles of the bronchi is well shown. It will be noted that the bronchi gradually taper in size as they subdivide, until they disappear into the alveoli, some of the latter being outlined on the left side. This is considered to be a normal bronchial tree in size and distribution.



Nearly Normal, with Possible Early Changes.

Figure 2. (Ref. by Dr. R. W. Eaton.) Married woman, with history of lung infection complicated by hay fever. Physical signs of old fibrous tuberculosis in upper right lobe. Suspected of having bronchiectasis on the left side. Lipiodol injection Sept. 26, 1926, 20 c.c. into left side, outlining the lower bronchial tree. The alveolar structure is shown to a slightly more than normal degree, with a suggestion of sacculatation at (a).

Subsequent attempt to outline the upper bronchial tree on the right side was not successful. The process there is probably an old fibro-cavernous tuberculosis.

In Figure 2 is shown another practically normal lower left bronchus and distribution. The alveolar structure is more thoroughly outlined than in Figure 1. The facility with which the alveolar structure is outlined probably indicates an abnormal degree of re-



Early Linear Bronchiectasis.

Figure 3. (Drs. Holmes and Randolph.) W. G. C., carpenter, age 55, resident of Arizona for twenty-five years. Has had asthma from infancy, except during a period of three or four years when he secured relief by taking an "asthma cure." Caught cold in January, 1926, and is now having cough with about one ounce of expectoration a day. Radiographic examination in 1925 showed fibrous changes suggesting bronchiectasis.

Lipiodol injection June 16, 1926 (by Dr. Stuart Pritchard) in Phoenix outlined the lower right bronchial tree. Changes are not marked and are to be classed as belonging to the linear type of bronchiectasis, seen in typical form at (a) and (b).

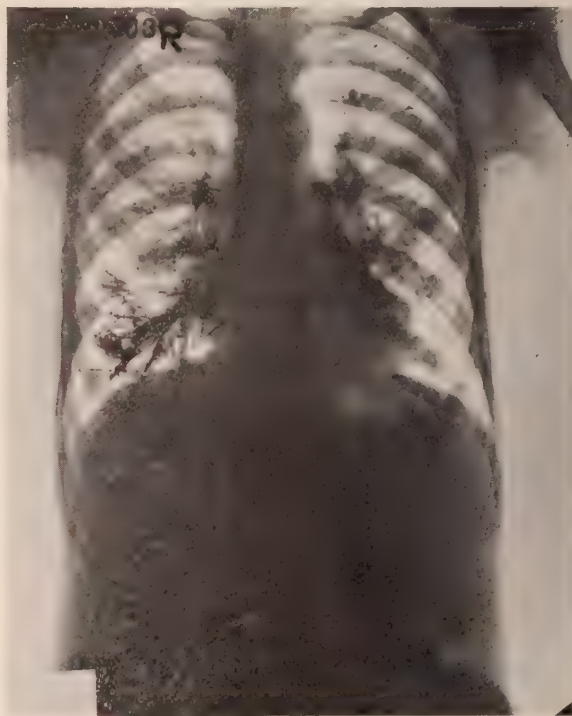
Subsequent injection of the left side showed similar changes on the lower left lobe.

laxation in the bronchioles. At (a) are some small dilatations. The bronchi, however, show the normal appearance of gradual tapering as they subdivide as compared with the appearances to be seen in clinical bronchiectasis.

The first stage of bronchiectasis is the **infiltrative type**, in which there is infection

along the bronchi, with some infiltration of the adjacent lung tissue. It is called the **linear type** by Moore, because of the linear shadows on the plain radiograph. In this stage, when the bronchi are outlined with lipiodol, it will be seen that instead of tapering as in the normal picture, certain of the bronchial subdivisions will show the same size as, or even larger size than, the parent stem from which they spring as shown at (a) in Figure 3. This condition may be general throughout the distribution of a bronchial tree, or may be localized to small areas, as in (a) of Figure 4.

As the pathologic procession advances, the bronchial branches become more dilated. If this dilatation is widespread along the bronchi, the development is into the **cylindrical type**. In Figure 5 this is quite well shown, the bronchi of the left side, only partly outlined, show uniformity in size over a distance of two or three inches, the cylindrical dilatation terminating bluntly.



Linear Bronchiectasis, Changing into Cylindrical.

Figure 4. (Ref. Dr. G. E. Goodrich.) Boy, age 14, with history of chronic cough and expectoration since 1921. Plain radiograph Aug. 3, 1927, suggested bronchiectasis. On Aug. 26th the left lower bronchus was injected with iodipin showing beginning sacculations on the terminal bronchi. On Sept. 10th, injection of the lower right bronchus was made, as above, showing localized lesions at (a) and (b), of the linear type verging upon the cylindrical and saccular.

On the right side the dilatations are far out along the smaller branches of the bronchi. This illustration shows the linear type just emerging into the cylindrical type. In Figure 6, the cylindrical type is shown well developed on the left side, with the linear type persisting on the right side.

The **saccular type**, or third stage of Moore,



Linear Bronchiectasis, changing into Cylindrical

Figure 5. (Drs. Holmes and Randolph). Married woman, age 25, has had chronic cough since she had measles at age of eight. Is fairly well nourished and in good strength. Since birth of child two years ago, cough has been worse. Has been examined for tuberculosis by physician in Texas, who states that she has bronchiectasis. After this observation was made, patient developed pneumonia in February, 1925, which had not entirely subsided in March, at which time radiograph showed evidence of unresolved pneumonia on the right. Patient went to Texas and returned to Phoenix early in 1926, much improved.

Injection of lipiodol; Aug. 5, 1926, outlined the lower right bronchi of the right side and partially outlined those on the left. The distal branches of the right bronchus show linear dilatations merging into the cylindrical. Similar condition exists on the left.

may develop upon the cylindrical, as a further stage, or the sacculations may develop from localized areas of damage to the bronchi, comparable to the development of sac-

cular aneurism. In Figure 7, the sacculations are shown developing chiefly by further distension of cylindrical bronchiectasis, confined chiefly to the left lower bronchus, but showing also some changes in the posterior branch of the lower right bronchus. In Figure 8, an advanced saccular type, the areas are numerous but each is evidently a localized area of distension. Some cylindrical dilatations are shown, but the pathologic picture is chiefly that of the saccular type.

CONCLUSION

The presence of bronchiectasis, the stage of the disease, the location of distended bronchi or sacculations, and the extent of the involvement can be readily and easily determined by the supraglottic injection of iodized oil. Such determination is of great value in planning the mechanical, medical or surgical treatment of bronchiectasis.



Cylindrical Bronchiectasis.

Figure 6. (Drs. Holmes and Randolph.) Miss S., age 17. Had double pneumonia, with sinus infection since.

Lipiodol injection in July, 1926, outlining both bronchial trees fairly well. On the left side there are typical cylindrical dilatations of the bronchial divisions of the posterior branch. The typical blunt terminations of the dilated segments are well shown at (a). On the right side the changes are not so advanced, being in the linear class, (b).



Cylindrical Merging into the Saccular Type.

Figure 7. (Drs. Holmes and Randolph.) S. M., age 27, mechanic. Had pneumonia in 1920 and has been expectorating freely since. Lipiodol injected in July, 1926, outlining the lower bronchi on each side satisfactorily.

The changes are most marked on the left side, chiefly in the distal branches of the posterior bronchi. The pathology is that of cylindrical dilations with sacculations developing. Note how the involved area would be entirely hidden by the heart shadow in the ordinary radiograph.

On the right side, the changes are still in the linear and cylindrical stage with small sacculations at (a).



Saccular Bronchiectasis.

Figure 8. (Drs. Holmes and Randolph). G. L. C., age 22. Has had measles, whooping cough, tonsillitis, influenza. Has been coughing since eight years of age, with large amount of sputum all the time; expectorates about eight ounces a day at present. Stopped work six months ago. Has shortness of breath and pain in chest. Sputum repeatedly negative for tubercle bacilli.

Lipiodol injected in July, 1926, outlined the lower bronchial divisions on both sides. On the right side will be seen the typical irregular, saccular pockets of this stage of the disease. On the left side, sacculations can be seen developing along the course of cylindrically distended bronchi, with terminal pockets.

MATERNAL MORTALITY

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Read before the Maricopa County Medical Society, at their regular meeting in April, 1927, at Phoenix, Ariz.

From all sides attention is being turned toward the question of our maternal mortality due to puerperal causes. In the larger medical centers it is more than a frequent topic of discussion, linking with it the hope that the increasing practice of obstetrics as a specialty will materially lower this loss of life. The means of accomplishing this end must lie in this direction, as, with the progress of scientific medicine and the ability of the general practitioner to handle disease, the death rate from pregnancy has not materially decreased. What the hazard of childbirth has been in centuries gone by, we can only guess. In spite of

the blaming of civilization for the pathological trend of pregnancy, the reading of ancient medical literature informs us of the frequency of serious trouble and the dread of the obstetricians of that day as they went to attend such a case with the crude methods then known. Today, with the practice of medicine rating high among the sciences, but few of the dangers besetting the pregnant woman have been obviated.

From our individual experiences as practicing physicians, we do not secure an accurate impression of the number of women who die yearly from puerperal causes. Vital statistics, instead, are necessary to show us the magnitude of the problem we face. It is fully realized that statistics improperly handled are dangerous in that they lead to false conclusions. However, the United States Department of Labor, through the Children's Bureau, several years ago pre-

sented for our consideration an estimated yearly loss of well over 18,000 mothers, which is at least conservative, if not accurate.

It seems necessary to estimate this because, as late as 1921, the death registration area included only 82.2 per cent of the total population of the United States. More definite figures have been made recently, but have not yet become the basis of much literature. It seems that the accumulation of necessary data, the ascertaining of its reliability, and its application to conclusive statistics, is a tremendous and tedious undertaking. Those who have made possible these estimates have had to correct for many sources of error in the form of incomplete registration of deaths, faulty certification of causes, incomplete registration of births, a presumed lowering of the birth rate, etc. The literature is complicated by charts and graphs, discussions of causes of deaths, periodical peaks of high and low mortality, the factors of nativity, age, social, climatic, rural or urban conditions; the mortality and morbidity rates are expressed as per thousand population, in different percentages, and with all the numerous detail which results from intensive delving into statistics. These details only bring about confusion and error and will not be recorded here. Adair has recently surveyed the sources of error in the 1921 report, and estimates a yearly death toll of more than 20,000. De Lee places it at 25,000. That these figures mean something is evident when we hear that probably no disease except tuberculosis has a greater toll among the women of child-bearing age.

Much of the recent literature on this subject is dealing with the question in terms of maternal mortality per thousand live births. From a consideration of the birth and death registration systems throughout the country, it seems that this is a rather comprehensive method of expression. Comparative figures are more easily arrived at, the chances of error are not so great, and, if errors are made, the tendency is to put the death rate at a lower absolute level than it really is. This is not important, as the most conservative figures should cause us serious concern.

From Woodbury's report, we learn that the mortality rates in the United States are at this time among the highest in the civilized world. After compensating for all the known sources of error, there seems to have been a very slight downward trend in the last twenty-five years. The maternal mortality rate of 1921 was 6.8 per thousand live births. In comparison with this rate

there have been cited the rates of eighteen foreign countries which were all lower than ours. Denmark has a rate as low as 2.4; Sweden, 2.5; Italy and Norway, 3.0; England and Wales, 3.9. A few nations approach us with a rate of 5.7 for France, and 6.2 for Scotland. At the end of this disappointing comparison has been printed the startling statement, "18,000 of our mothers died in childbirth in 1921. Most of them could have been saved. Why weren't they?"

It is shown that approximately two-fifths of the deaths are due to puerperal septicemia, due to infection through faulty aseptic technic. It is worthy of consideration that, because of the cases of infectious nature that we must see from time to time in general practice, we may be carriers of infection. There are instances in which auto-infection undoubtedly takes place—an old salpingitis, or other focus of infection, proving the undoing of our most strict precautions. Authorities consider, however, that sepsis is almost one hundred per cent preventable. One-fourth of the deaths are due to the toxemias and can be very greatly diminished by proper care during pregnancy and at delivery. Improper management and instrumentation, the accidents of pregnancy and the accidents of labor—not forgetting hemorrhage in both periods—are responsible for the most of the rest.

No attempt has been made to fix the blame, and it would not accomplish the desired result if done. It behooves us, however, to critically survey all factors which perpetuate this loss of mothers. The public itself, through ignorance of all things medical, retains the all too prevalent idea that, since Nature has provided this method of reproduction, it must be free from all imperfections and dangers. It was until recently that we had with us the belief that travail and suffering were the heritage of woman and that efforts to relieve her were rank heresy. Even in this modern era, a considerable portion of the laity feels that the elderly woman next door who has several grown children, or the neighborhood mid-wife, irrespective of qualification or license, is plenty good enough to be in sole attendance during labor.

The mid-wife has been challenged and there is a tendency to slip the burden onto her shoulders. Investigators, however, have reported that the mid-wife, at least in districts where she is carefully licensed and supervised, is not responsible for the high mortality. In these studies, all fatal cases are included in which a mid-wife was at any time in attendance. Levy cites definite instances in cities and counties in which the

percentage of births by mid-wives decreased while at the same time the maternal mortality rate increased. It is interesting to note in this report that in Pittsburgh there was an increase in births attended by mid-wives, with an accompanying decrease in the mortality rate. An analysis of the cities of New Jersey shows that the lowest maternal mortality rate is in that city with the highest percentage of births attended by mid-wives. The highest mortality rate is in the city with the second lowest percentage of births attended by mid-wives. Eichel, in a preliminary note on studies being made in the Vital Statistics Division, New York, also defends the work of the mid-wife. He cites as reasons for the low fatality in the practice of a New York mid-wife, the following: First, many of them, if not the majority, obtained their obstetrical training abroad at a time when it was superior to that obtained by the average American medical student, and some have had a training possibly better than that obtained by any medical student today. Secondly, she attends only normal cases, quickly recognizes abnormal conditions and promptly calls a physician who is, usually, a good obstetrician. Thirdly, she is clean and interferes as little as possible with Nature's own mechanism of delivery. Lastly, she endeavors to obey the state law and regulations, violations of which would subject her to both cancellation of her license and prosecution, either of which might befall her far more readily than it would the physician, who has the prestige of his profession and public opinion to support him. Hence, if we investigate the work of the mid-wife, it seems that it should be to find an explanation for her lower mortality rate.

One writer has already charged the medical profession with "meddling obstetrics" and cites it as a probable cause for our high mortality rate. This does not mean operative obstetrics when indicated in the pathology and accidents of labor and done by skilled men. Statistics from Norway and Germany have shown a lowered maternal mortality rate since the increase of operative obstetrics done under the above conditions by the highly trained obstetrician. If we take pride in our profession and are to feel that we are not helpless, but have definitely advanced from the mid-wifery of past centuries, this thought should cheer us. However, if we are to treat obstetrical pathology actively, let us be sure that we have the proper judgment, knowledge and skill.

It is an accepted fact that much of our maternal mortality could be prevented. This

paper is not intended to be didactic in nature or it would assume textbook proportions. The necessary detail is readily found in the works of several authors, and in the periodical publications dealing especially with this phase of medicine. This is seldom sufficient, it is true, to help us in times of dire need. Briefly, there is nothing that will easily take the place of active post-graduate experience in a maternity hospital under competent supervision. The young obstetrician can feel that he at least has a good start toward the successful practice of his specialty. It is true that such post-graduate training is not available to all physicians. To make the need for it less, more attention should be paid to the undergraduate student and obstetrics be given its rightful position of importance on the curriculum of all medical schools. Further, the general hospital employing the interne should still consider him as a student and see that he is carefully directed, both in judgment and technic, during the short time that he is usually able to spend in the obstetrical service.

We of the medical profession, by acting both as individuals and as an organization, can correct the situation as it has existed and as it still exists, to a great degree, today. A comment has been made recently to the effect that if progress is to be made in the attack on the death rate of women associated with child birth, there must be a revision of "the notorious disappreciation and disesteem of obstetrics" that exists at present. We should be active, not passive, in this movement which is gradually showing itself in the medical schools, our large hospitals and medical centers, public health offices, maternal welfare societies and other lay organizations, and which, in time, will stir the public mind to the knowledge that parturition can and must be made safer.

We are taught, but do not always accord sufficient importance to the fact, that puerperal septicemia, the greatest single factor in this morbidity and mortality, yields to the rigorous observance of asepsis. The Australian Committee, in its report, states: "Puerperal septicemia is probably the greatest reproach which any civilized nation can, by its own negligence, offer to itself. It can be prevented by a degree of care which is not excessive or meticulous, requiring only ordinary intelligence and some careful training." The success of aseptic procedures is shown by the experience of well conducted hospitals in which the mortality is low. In Australia, the Sydney Women's Hospital several years ago reported nearly 4,000 cases without a death from puerperal sep-

sis. Adair and Maland more recently reported 1,512 cases of pregnancy admitted to the Swedish Hospital in Minneapolis, without deaths from puerperal infection having occurred. Among 11,605 confinements at the Chicago Lying-in Hospital, only five deaths occurred from puerperal sepsis, and, in all but one of these five cases, the delivery took place outside the hospital.

The exercise of judgment and skill before, during and after delivery is highly essential. Adequate prenatal care will reduce the incidence of death from the toxemias and the accidents of pregnancy. Careful examination of the patients before delivery will sometimes forewarn the attendant of impending difficulties and the accidents of labor can be prevented or more easily handled. Non-interference with Nature's mechanism of labor in normal cases, we know will reduce the hazard. However, even the normal pregnancy and labor presents the equivalent to the careful pre-operative care preceding the most severe of surgical operations, the asepsis, technical skill and judgment employed in the operating room and the post-operative care which follows. Quick recognition of present or impending pathology is imperative and the training and qualifications necessary to properly handle this pathology is an ideal attainment and should be more earnestly sought. If the solution can be briefly stated, then we must say that obstetrics must more and more be regarded as a highly specialized branch of surgery and must be appreciated and prepared for as such.

In conclusion, reliable statistics which are more illuminative than our own personal experiences and observations, show us that our maternal mortality is high in proportion to the progress of medical science. It is highly desirable that this situation be corrected. This should and can be done by the medical profession itself acting as individuals and as an organization. The proper valuation of obstetrics as a specialty is absolutely necessary. The training of the undergraduate student should be given much more attention. Graduate physicians who wish to do maternity work should avail themselves of every opportunity to study and do post-graduate work, as would be expected of them in the doing of major surgery or any other of the more exacting phases of medicine in which rapid progress is being made, as is now true in obstetrics. Education of the public as to the need for early, and most especially competent, care is one of the most important phases of the new movement, yet probably the most delicate and most difficult to bring about. The

building of more maternity hospitals should be encouraged and the public should be taught that the expense of care in such an institution is not only justifiable but is of economic importance in the preservation of health and life. The same can be said of well conducted obstetrical departments in general hospitals. Last, but not least, we should not be contented with what has already been done toward the safeguarding of the pregnant woman, but should constantly strive to eliminate the imperfections of our art which we know exist, so that, when the prospective mother applies to us for care, we shall not fail her.

Note: Since this paper was written, reports from the Child Hygiene Division show a maternal mortality rate of 7.018 per thousand live births in Arizona during 1926, a definite increase over the figure for 1925 which was 4.45. A detailed analysis of these figures has not yet been made.

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CLINIC ON CARDIORENAL DISEASE AND DIABETES

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 New York City.

(Held at Hotel Dieu, El Paso, Texas, as part of the Clinical Congress of the Medical and Surgical Association of the Southwest, at their Annual Meeting, November 2 to 5, 1927).

CASE I.

Soldier, colored. Violent diabetes. Had some indefinite feelings of illness, especially mornings. In January, 1927, began to feel badly. In February had carbuncle on chin. At this time found sugar in urine. Was placed in hospital on low carbohydrate diet, which controlled sugar. Had incidental in urine. Was placed in hospital on low carbohydrate diet. 169 lbs.

This man evidently ran down in weight from sugar, in the first place, and then, under treatment he was reduced by a few pounds more. Even with this loss in weight, the patient says he feels better. That is, he felt weaker when he was weighing 173 pounds, with sugar, than he does now without sugar. The blood sugar in this case was 191 to start; during the test he went as high as 440, after three hours it was still 330. The last test was made Feb-

ruary 28th, when it was 171. The urine shows either sugar-free or a trace. Other examinations appear to be negative. Teeth and other foci of infection, negative. There is some recession of gums reported, which comes in diabetes.

His diet is an unweighed one, simply low in carbohydrates. He has learned to restrict this himself, his doctor states. If the patient is careful, and if he controls his weight satisfactorily, he may get along well indefinitely on this sort of a diet. The patient states that he finds improvement when exercising, which is right.

CASE II.

Girl, 9 yrs. No family history of diabetes. Child in good health. Pneumonia at 5. In September or October of 1926, the parents noticed that she got up at night to urinate. In January the urine showed sugar. January 13, 1927, treatment started—height 51 inches, weight 56 lbs. Diet: 40 grams carbohydrates, 65 protein, 90 fat; making 1230 calories. Insulin was begun, 9 and 4, increased to 9 and 7. Became sugar-free and diet increased to 43 carbohydrates, 72 protein, 132.5 fat, total of 1652 calories; insulin 10 in morning and 10 in evening. On January 28th, blood sugar 120 mg. During next few months she gained slowly in weight. Aug. 1st, weight 61 lbs. Sept. 6th, 60 lbs. Sept. 20th, weight 60½ lbs.; height 51¾ inches. Diet 62.5 carbohydrates, 74.7 protein, 137.5 fat. Weight at present is 63 lbs., indicating that she continues to do well.

This diabetes may possibly have started from pneumonia; there is no proof of that. It is unusually fortunate that a child of this age can be in such perfect condition on two doses of insulin a day. This is due to the fact that treatment was started before the case reached the critical stage. The earlier treatment starts, the better for the patient. The opportunity for such good results is lost if time is allowed to pass. A few years ago this case would have been classed as hopeless.

In regard to diet, I find no real advantage in figuring it down to exact grams. Two or three grams variation makes no real difference. Therefore, I find it more convenient to use round figures, and in a case like this would give 70 grams of carbohydrates and 80 grams of protein. That would be a little increase of protein and carbohydrates, which is good for a growing child, and a little more comfortable, and you will find it makes no particular difference if you keep anywhere near these quantities of protein and carbohydrates; there will never be accidents. What I am trying to get at is that I want to encourage as many doctors as possible to use the weighed diet, and therefore make it as simple as possible.

If everybody would get such good results in children, there would be no mortality. Her mother is trained to weigh her diet, and to make the urine test. If the child

gets a cold or tonsillitis, or has an accident of any kind which upsets her tolerance, the first time sugar is found in the urine, steps can be taken to stop it.

Q. What is the prognosis in a case like this?

A. With care she should live as long as anyone.

Q. Is there a CURE for diabetes?

A. We have got to wait for further research before we can say that there is a positive cure for diabetes. There is no record of a complete cure in any patient, young or old. But, as I said before, it is not the fatal thing we used to think. It is now simply a matter of inconvenience, a nuisance in the matter of following a diet and taking insulin. There is very small chance for a patient of this kind to stop all treatment.

CASE III.

Female. Less than 40 years of age. No family history of diabetes. Health good. At 24 she weighed 120 pounds. Then she had typhoid, and while on limited diet following typhoid she began to put on weight. For 2 years she weighed 265 lbs. In 1925 she was found to have diabetes. She was treated but does not know if she became sugar-free. On Aug. 13th she developed acute cystitis, which is very common in these cases. Sugar was found as basis of it. On Aug. 14th she was put on a diet of 1139 calories. Insulin begun, 24 in morning, 16 in evening. Aug. 29: Urinary symptoms subsided. Weight 243 lbs. Sept. 6: Weight 235 lbs. Complained of weakness. Diet increased to 1489 calories, consisting of 67 carbohydrates, 65.6 protein, 106.5 fat; same insulin dosage. Remained sugar-free. Sept. 12: 241 lbs. No edema. Diet 69 carbohydrates, 65.6 protein, 86.5 fat. Same insulin dosage. Oct. 25: Weight 244 lbs. felt well. Sugar-free. Diet: 82 carbohydrates, 57.6 protein, and 50.5 fat, total of 1013 calories. Insulin dosage 24 and 16.

This patient does her housework, but finds it a little difficult to do much walking. We see some of these cases with actual bone changes due simply to obesity. They develop flat feet, pains in the ankles, calves and knee-joints.

With the history this patient gives, we may conclude that very likely granular trouble occurred with the typhoid. She states that she was put on a very light diet following the typhoid, but continued to gain weight.

Some people say they eat hardly anything and still they get fat. Others say they eat everything and stay thin. People just metabolize food differently. But in spite of all the gland deficiencies in the world, I tell all fat persons that they cannot become fat on air. If they deposit fat on the bones, they must get it from somewhere, and that can only be from the food they eat. They may have a greater tendency to become fat

than some people, but they eat material that makes them fat.

We guarantee to reduce every fat person; some are more difficult to reduce than others, but they can all be reduced. It can usually be done without serious hardship. The hardship comes in those cases who are remarkably hard to reduce and who are also very hungry. Some of these patients have, during all of their lives, eaten to excess, and if you cut them down perceptibly, they suffer from faintness, headaches, etc.

Now this patient does not complain of a ravenous appetite. Therefore it is easier to reduce her. One way in which this can be done is to cut down the fats in her diet. She would lose, as is shown by the loss of weight on some previous occasions. Her last diet shows 82 carbohydrates, 57.6 protein (that can be increased to 70 or if necessary to 80) and instead of 50.5 fat, she can be given a diet that is almost fat-free. I would give a taste of grease. Things can be yolk, young chicken (especially the white meat,) most kinds of fish, since fish in general do not contain much fat, gelatin, cottage cheese made out of skimmed milk, and, for a change sometimes, any very lean kind of meat. Instead of the ordinary fat or grease, we use substitutes such as mineral oil, which is good for constipation, and gives a taste of grease. Things can be fried in it, and if you do not let burn, it will taste all right. Then add bran, either as a cereal or made up into cakes. The carbohydrates you can put in the form of green vegetables, and when you have 80 grams of carbohydrates, and 70 or 80 grams of protein, that makes a very good diet. If you want dressings, you can make a very good one with mineral oil, a little egg and vinegar. There are all sorts of tricks like that to make a diet satisfactory. The patient will lose weight in this way. Perhaps she should exercise a little more than she does, outdoor walking is helpful.

If you wish to cut down weight most effectively, we introduce the salt-free diet. In the first place the patient is not so hungry on this diet. Then it has been found that many of these cases of stubborn obesity are accompanied by retention of water—more or less invisible edema. In Europe they have given strenuous diuretics and found they can produce a loss of ten pounds in weight in a day or two. I think that is not a very good thing to do. A salt-free diet I have found will often bring about a big loss of weight the first day or two, showing that part of the weight was due to retention of water. It may not be marked in this patient, because she does not complain of

shortness of breath. With the edematous form there is usually shortness of breath.

There is no harm in trying a certain amount of thyroid. Do not be afraid of the diabetes. We have never hesitated to give thyroid to a diabetic patient who needed it.

This is a mild diabetes. Instead of 40 units of insulin, this patient ought to take less. After the weight has been reduced, it will be found that the insulin has dropped step by step until it gets down to zero, and by the time the weight is normal, she will actually have a high tolerance. She can then take a comfortable diet and be free of obesity as well as diabetes. If you get her cooperation, this result can be obtained.

Q. How much do you expect her to lose?

A. She probably had her best health when she weighed 120 pounds. With her height there is no reason why she should not get back to that again, if she wants to. I recall the case of a woman who weighed fully as much as this patient; she had been a dancer on the New York stage, naturally of a slim build. She could barely move around with two canes on account of joint changes, etc. We got her back to 120 pounds, but it took us a year to do it. There is no harm in reducing anybody, but you should not do it too rapidly.

Q. How rapidly can one reduce?

A. On a salt-free diet a patient will sometimes lose from five to ten pounds in one week, but that does not keep up. After that, if you can just keep up a steady loss of two pounds a week, and after a month or so, a positive loss of one pound per week, you will still be doing all right. There is no need to make the diet too weakening, nor to be hard on anybody. Of course, patients are different; some will come in and say: "I don't care how rough you are on me, I want to lose as much weight as I can." Others do not want to be too uncomfortable, and you cannot be too rigid with this latter type.

Q. How long would you advise keeping up thyroid?

A. I cannot say definitely; it may be kept up for long periods. Of course, if a patient shows any sign of rapid pulse, nervousness, etc., stop the thyroid immediately.

CASE IV.

Male. Soldier. Not much of importance in history. Noticed albumin and pus in urine on first examination in April, 1927. The next urine test a little later showed sugar, no pus, but some red blood cells. The red blood cells cleared up in a few days. Sugar persisted. Has persisted almost continuously, in fairly large quantities, ever since. Since then no more albumin, pus or blood—just sugar. Blood chemistry taken in typical manner is normal. Blood-sugar tolerance test June 24, 1927;

gave 95 grams glucose in 40 per cent solution, with the juice of a lemon to prevent nausea; 96 mg. sugar in blood on starting; inside first nour 172; an hour later 215, then down to 116, then 95, then 55, then 43. This is low blood sugar. Urine collected at 9:20, before test; 6.5 grams sugar, when blood sugar was 96. Urine collected at 11:20 and bladder emptied at 1:35 at end of test, and still contained 5 grams sugar. Part of the time he has been on regular diet, part of the time on somewhat restricted diet. Sugar constantly present in urine. Sugar in 24 hours, 30 odd grams per day.

Here is the question in this case: Is this diabetes or glycosuria? I would suggest a fermentation test to make sure of glucose, to give us a starting point. Then there are two things to decide.

First: Is this a glycosuria? That seems to be pretty well decided by these tests. For example, if the blood-sugar is low, and sugar is present in the urine, then we know this is a case of glycosuria. I note on the history here that on July 12th, a glucose tolerance test was made with 96 grams glucose, with blood-sugar before the test 104 mg., 135 mg. in one hour, and gradually going down again to 112 mg. Urine showed over 5 grams of sugar.

Second: Is this diabetes? In the second glucose tolerance test the blood-sugar is not high. In the first test there was one high figure, 215; if that can be verified then this is diabetes. It ought to be tested with particular care. We do not know why the two tests should be different, but a single test with 90 odd milligrams of glucose does not always prove the true condition. I could suggest that if he could take 200 grams glucose, it would be well to give it, and try to force the blood sugar as high as it will go. In a diabetic you can force it up. Put him on the highest possible carbohydrate feeding for one or several days. That means starch or sugar in every form—hot cakes, maple syrup, desserts. If you can force up the blood-sugar the case is at least mildly diabetic.

Of course, it is quite possible for any person to have two disorders; we see diabetes and kidney disease all the time, and diabetes and high blood pressure. Any of these can be combined, and we have records of combined diabetes and glycosuria. It is very hard to treat because you cannot get the urine sugar-free. You have to figure out how much sugar is due to the diabetes and how much to glycosuria.

With glycosuria there is sometimes more or less weakness. With severe diabetes plus glycosuria, the patient goes down hill rather fast. Incidentally these cases are very refractory to insulin. In a case of this type, very likely small doses of insulin would knock him right out.

Q. Do you have any difficulty with patients vomiting when giving glucose?

A. Glucose can only be given to the vomiting point. Some people can take 300 grams and not vomit. Others can take less than 100 grams. The use of lemon with it is helpful, and sometimes if the patient drinks the glucose and then sucks a lemon afterward or takes a few sips of black coffee, he will get over the nauseating effect. The degree of concentration has some effect; a very concentrated solution will make anybody nauseated.

Q. Is it possible to get along without blood-sugar tests?

A. I think you are almost compelled to make them. We check up all of our cases occasionally—say two or three tests a year.

Q. In these diets, do you give the minimum?

A. We try to give a fair and balanced diet. Never give the minimum unless necessary to keep the patient from using insulin.

Q. Do you find that the patient feels better and works better if he gets a large quantity of carbohydrates?

A. Yes, and he is less liable to break down.

Q. When you speak of a "balanced diet," do you mean one that is pleasing to the patient?

A. Taste is a pretty good thing to follow in the matter of diet. There is something that we do not understand about the mixture of food-stuff. For instance, you cannot force a dog to develop acidosis, and if you undertook to force him to eat a high fat diet, you would make a mighty sick dog of him. Suppose you have a patient with kidney trouble, you give him 40 grams or less of protein and he can live on that, but generally we prefer to give more, as it makes the patient more comfortable and less liable to break down. If the diabetes is mild, we give increased carbohydrates to correspond. It all depends a good deal on the patient. On the one hand we have the type of case who can never get enough to eat. The other extreme is the small, frail woman, with very delicate digestion. Try to feed her coarse vegetables, and she gets upset immediately. What she needs is bread, rice—a concentrated small bulk diet..

CASE V.

Male. Pain in heart region, goes down left arm. Tires easily. Has swelling about tops of shoes. Seems rather weak. Gets out of breath easily. Slight dizziness. Does not sleep particularly well. Blood pressure 155 and 90. Last readings: Left arm, 145 and 70, right arm 135 and 68—not very much of a hypertension. Wassermann test negative. Other tests are essentially negative. Blood count

negative. Electrocardiographic diagnosis: Myocarditis. X-ray shows nothing in particular. Attacks of pain in left side come on mornings, if he walks or exercises. No pain at night. Can bring on an attack intentionally.

We can not go into all the details in this case. One thing ought to be done; his blood pressure should be taken during an attack. I saw one patient who had a violent typical angina, with normal blood pressure of 120 and 60. He had been to all the well-known clinics. We took his blood pressure during the time of an attack and found it was well over 200. I should not wonder if this man had a blood pressure of that character. He has other indications of hypertension, and during attacks of vascular spasm, either his blood pressure goes up excessively or his heart fails to carry the load at that time.

Typical angina is about the hardest thing in the world to treat. I do not feel that cutting the sympathetic nerve gets at the bottom of the thing. It relieves the pain, but the fatal condition is still there.

If you are not afraid to bring on an attack in a mild way, it would be well to see if his blood pressure runs up during an attack. There is no need to restrict the protein in this case. He ought to be on a salt-free diet. For one thing he has edema, as evidenced by the swelling over the shoe-tops. That always calls for a salt-free diet. Anyway, a salt-free diet will enable him to sleep flat at night, and sometimes the angina is relieved in these cases. It does not do any harm in any case.

CASE VI.

Widow. Age 44. Family history mostly negative, although one brother had high blood pressure. Another had cirrhosis of liver. One sister died of measles while pregnant. At 8 or 10 years of age had bilious fever. Has two living children. Flooding spells four years ago. Weighed 180 lbs. Blood pressure 245. Began to have dizzy spells. Cannot walk on street alone, steers to the right. Tendency to sleep all the time. Melancholia. Thin. Anemic. Pain of light nature over right kidney. Urine shows trace of albumin, no pus or sugar. Wassermann negative. Blood pressure a week ago was 280 and 145.

This looks like a typical case of essential hypertension. There is the usual trace of albumin in the urine, but normal blood chemistry. The melancholia is due no doubt to the cerebral arterio-sclerosis which gets worse as the years go on. Treatment has consisted of iodides, restricted diet as far as protein is concerned, reduced salt.

It has been the general impression that everybody who has hypertension is a big eater, leading a strenuous life, under nervous strain. But you can get a hypertension just as likely in a rather small woman, lead-

ing an ordinary kind of life. One thing we always do is hunt for a possible source of infection. If there is any sign of trouble in the tonsils, they should be removed, regardless of her blood pressure. The teeth should be thoroughly x-rayed. Any infection will hinder treatment. This patient will be helped by a salt-free diet. I think if she is put on a strict enough diet, she will feel some better, but it will take six months or a year. With a blood pressure as high as this you must not expect too rapid a change. There is probably enough organic damage to the blood or kidney vessels to make the case refractory to a certain degree. You cannot expect too much in clearing up organic damage by any functional method of treatment.

For my own part, I would stop the iodides, if there is no luetic element present. A strenuous diet will show some results. Within a month she will probably get enough fall of blood pressure so the tonsils could be operated on, but even with the high pressure, it would be better to have them out.

Q. How long should she keep on a salt-free diet?

A. Indefinitely. If a patient comes to you in the early complications, it does not take so long to accomplish results. But in this case now—after eight years you will have to use diet for a long time.

Q. What sort of a diet would you recommend?

A. Strictly salt-free diet. There is no need to limit the protein. If she likes beef-steak, let her have it.

Q. What is your experience with bleeding?

A. An immediate reduction of blood pressure is not of much value, only to relieve attacks of threatened apoplexy and the like. In this case, at any rate, no benefit is to be derived from quick reduction. Artificial lowering of the blood pressure does not get at the seat of the trouble. The point is not to relieve the blood pressure itself but what is back of it. Unless there is some danger in sight, like apoplexy, she does not need bleeding.

Q. What do you use for the bowels?

A. If a mild laxative will do the work, use cascara or mineral oil. If it is necessary to use something stronger, an occasional dose of Epsom salt or something of that sort.

CASE VII.

Male. Candy manufacturer. Married, 4 children. Usual weight 205; at present 207. Height 5 ft. 7 in. Chief complaint: Rash on arms and chest. Itches. Teeth removed; dentist said some pus. Blood pressure fluctuates apparently. Mother died at

62, hardening of the arteries. Typhoid 19 years ago; nothing else in particular in past history. Eats a lot of ice cream. Does not drink. No headaches. Nervous. Is bothered by the noise of children's play. Constipated. Never had rash until about a month ago. Physical examination essentially negative except rash and obesity. Abdomen seems to be especially fat. Urine essentially negative. Blood thoroughly negative.

The case before this I said was a difficult one to treat. This one I would say was quite easy. What I would do in this patient's case is to reduce his weight and put him on a salt-free diet. The rash can be diagnosed more easily by people who study these things especially, and who have a more scientific conception of it. But I would say to cut down his weight and the skin will probably clear up.

His blood pressure seems to fluctuate, and with normal blood chemistry, not even albumin in the urine, he has an excellent chance to get his blood pressure down and keep it down. On a salt-free diet he will get his weight down quite perceptibly. The patient states that he has reduced about ten pounds in the past two weeks and that his skin is beginning to feel more oily. A skin specialist told him it was not a skin disease. He has been on a limited diet, proteins limited especially. For my part, I would take a chance and let him have his proteins.

Q. What difference is there between that rash and the rash of pellagra?

A. I do not know anything about pellagra. But in the case of a man like this, as well nourished as he is, living the kind of a life he is living, I do not see how he could have pellagra.

CASE VIII.

Laborer. Mexican. Married; 4 children. Complaint: High blood pressure. Healthy as a child until 7 yrs. of age when lost sight of right eye. Family history not very clearly known, but thinks his father had high blood pressure. Past history, nothing in particular. Two years ago became partially blind in left eye. About this same time he became dizzy and troubled with high blood pressure. No constipation.

There is not very much to say about this case. He may be a trifle overweight about the body. The loss of some vision in the remaining eye is, I presume, due to retinitis. Reno-vascular disorders have produced by far the greatest number of cases of blindness. In this case the dizziness can probably be relieved by diet, and in all probability the retina can at least be stopped from getting worse. How much improvement he will have is questionable. The destruction that has occurred cannot be undone. Some years ago retinitis was a very bad prognostic sign, but we no longer fear it. The Wassermann is negative, but you

should hunt very carefully for luetic infection.

Q. Does harm ever result from the salt-free diet?

A. There is no harm if used right. An occasional patient will show the effect of salt privation, and you may have to give salt at least temporarily. If, after a number of days or a week, the patient should become weak all over, nauseated, we would know he needed a little salt.

Q. In those cases where there is a very strong family tendency to hypertension, with cerebral hemorrhage, would you advise prophylaxis?

A. Yes, that is where I would want a whole family to stay off salt. I do not believe in making the whole population stay off carbohydrates or protein or salt because of fear that they may develop certain diseases. It is only people who are abnormal, who need abnormal limitations. But where there is a strong tendency to hypertension in families, I think it best for the entire family to go on a diet to avoid development of hypertension.

One encouraging thing in these metabolic cases is that you can make tests and see yourself whether the treatment works or not. There is no method that works perfectly in every case. The woman we had here I would say would be the hardest one, and even in her case quite markedly demonstrable benefits may be obtained. But you ought to have laboratory proof.

Some cases of syphilis may cause a sclerosis in the pancreas and thereby bring on diabetes, but those cases are apparently very rare.

Any disturbing cause, any toxic or even mechanical defect may raise the blood pressure and then by removing that cause you may get the pressure down.

SYMPTOMS AND DIAGNOSIS OF CHRONIC APPENDICITIS

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Presented at the April staff meeting of St. Joseph's Hospital, Phoenix, Ariz., based on a study of cases of chronic appendicitis operated upon in this hospital.

Summarizing the symptoms in the 162 charts submitted for review, the following results are discovered:

In 130 cases there was pain and tenderness in the abdomen; this leaves thirty-two cases in which physical examination was negative. In a few of these cases the physical examination was lacking, and in a

few more no statement was made as to the presence or absence of physical findings.

It is not stated, however, in the 130 cases in which pain and tenderness was present, that these symptoms were elicited at the time of operation. In a large percentage of them the history and physical examination lead us to believe that, at some time in the patient's history, there was pain and tenderness in the abdomen. Therefore we are to conclude that a large percentage of cases have acute exacerbations of a chronic disease of the appendix, and between these exacerbations, physical examination of the abdomen is negative.

In by far the greatest number of these cases, the pain and tenderness is present in the right lower quadrant, generally localized over McBurney's point. In a small number of cases the tenderness is generalized over the abdomen, and in a few cases it is localized in the epigastrium.

Forty-five cases give histories of digestive disturbances, which include distress after eating, gaseous indigestion, belching, and the usual train of digestive disturbances; fifty-seven cases give histories of nausea and vomiting. Nausea was a very frequent symptom, mentioned about four times as often as vomiting.

Toxic symptoms were recorded in twenty cases. These symptoms include headache, fever and a general feeling of malaise.

Of the thirty-two cases which have negative findings, on physical examination nearly all of them gave histories of either digestive or toxic symptoms.

These statistics compare quite favorably with our ordinary conception of chronic appendicitis, especially if we remember that the cases reviewed are dealing with disease of the appendix alone, and do not include cases with multiple pathology.

Constipation was mentioned in only eighteen cases. This figure seems rather low, and it is very probably due to failure to record this symptom.

The symptoms of chronic appendicitis may be classified under four groups; namely, reflex, mechanical, toxic and infective.

Reflex symptoms are mainly symptoms producing digestive disturbances, and include hypertonus and spasm of the stomach, as well as failure of the pyloric and ileocecal sphincter muscles to relax, leading to gastric or ileal stasis. That hypertonus and hyperperistalsis of the stomach are often reflexly caused by a diseased appendix, and are responsible for the symptoms, was proved by the fact that Moynihan observed violent gastric contractions and spasm of the pyloric and other parts of the stomach

on the operating table, in the presence of a chronically diseased appendix. These symptoms indicate disturbed motor phenomena in the stomach and ileum.

Chronic appendicitis does not always disturb the motor function of the gastro-intestinal tract, bringing about hypertonus, but it may cause loss of tone in different parts of the gastro-intestinal tract. It is, therefore, no wonder that in a certain number of cases there is gastric atony, or atony of the cecum. In these cases, the atonic type of constipation is encountered, or, as is less often the case, constipation alternating with diarrhea. Very frequently there may be symptoms of hypertonus and spasm in some parts of the gastro-intestinal tract, and loss of tone in other parts. It is a common experience to find atony of the stomach and spasticity of the cecum or descending colon.

The reflex sensory phenomena due to chronic appendicitis, manifest themselves largely by the presence of pain in the gastric region.

Reflex secretory phenomena resulting from chronic appendicitis, are manifested by disturbances in the gastric secretions. In most cases there is hypersecretion and hyperacidity. Hypo-acidity in chronic appendicitis occurs, but is rare.

The reflex or secretory disturbances may spread to the colon, giving rise to mucous colitis, accompanied by periodic attacks of cramps, and the discharge of large quantities of mucus in the stools; or, they may even spread to cause increased salivary secretions. The presence of hypersecretion in the colon may give rise to frequent attacks of serous diarrhea.

In some cases of chronic appendicitis, the motor phenomena predominate, bringing about distress in the epigastrium during, or immediately after meals, persistent belching, regurgitation of sour fluid, and more or less continuous peristaltic unrest throughout the whole abdomen.

With depression in the motor function of the gastro-intestinal tract, the symptoms of gastro-intestinal atony are encountered, consisting of sensation of persistent heaviness in the abdomen, splashing sound over the stomach and the cecum, and gurgling and rumbling which is present in the abdomen, and especially marked five or six hours after meals.

In some patients, pain is out of proportion to all other phenomena. This pain may be in either lower quadrant, or it may be gastric, and even thoracic, but more characteristic of the pain is the fact that pressure over the appendicular region brings

about pain in the area of which the patient spontaneously complains.

Mechanical symptoms of chronic appendicitis are due to foreign bodies which are usually fecaliths or, occasionally, to parasites in the lumen of the appendix, or to adhesions between the appendix and neighboring organs. Fecaliths frequently give rise to appendicular colic.

The appendix has been called the tonsil of the abdomen, therefore, it is evident that, if infection is present in the appendix, there are generally toxins present also, and these toxins may be very readily absorbed, resulting in toxic symptoms in almost any part of the body.

The infective symptoms of chronic appendicitis are a general feeling of malaise, chilliness, increased pulse frequency, and moderate elevation of temperature.

A diagnosis of chronic appendicitis may be very easy if a history is elicited of repeated attacks of pain in the right lower quadrant, accompanied by more or less digestive disturbance. This, however, is true in only a minority of cases. It has been said that chronic appendicitis can not exist without an acute attack having been present at some time in the patient's life. If such be the case, the acute attack must have occurred sometime during the early childhood and, therefore, can not be recalled by the patient, or the acute inflammation gave rise to such insignificant symptoms as to go unrecognized. It can readily be seen how such could be the case, if we recall cases of acute fulminating appendicitis, which give rise to very few symptoms, that is, to symptoms which would suggest the immediate urgency of operation, until the leukocyte count reveals the severity of the infection. To use the words of Deaver, which are rather crude, but whose crudeness is equalled by the expressiveness of the statement, "The commonest cause of bellyache is appendicitis."

The differential diagnosis of chronic appendicitis includes an array of subjects.

We probably should attempt to differentiate, first, between a gastro-intestinal lesion and one which is outside the gastro-intestinal tract. The urologist is of inestimable value in eliminating the right kidney or a right ureteral lesion. Pelvic lesions in the female often make an exact diagnosis difficult, but the majority of these cases are surgical, and the main problem to determine is whether an organic condition is present; if so, everything can be corrected at operation.

The neurasthenic and the hypochondriac must be recognized in making a diagnosis

of chronic appendicitis. This patient is liable not to be relieved by surgical removal, even though the appendix is diseased. Of course, this should not be a contra-indication for operation, but we have not approached the real cause of the complaint.

If the lesion is gastro-intestinal, the great majority of cases lie between ulcer of the stomach, disease of the gall-bladder and disease of the appendix. The main thing to remember here is that, in the majority of cases, more than one condition is present. If we are dealing with an extremely young patient, in all probability the appendix is the offending organ; if the patient has passed the age of twenty-five or thirty, or if it is a woman who has borne children, and we find a chronically inflamed appendix, some of our best statistics claim a chronic infection of the gall-bladder in forty per cent of cases. The finding of this inflamed gall-bladder is not to be relied upon at the time of operation; this should be determined beforehand, by careful study of the patient's symptoms, history and laboratory findings.

In attempting to differentiate between peptic ulcer and chronic appendicitis, the main problem is to determine whether a diseased appendix is present or not. If ulcer is present, there is the well known triad of symptoms, which are: (1) distress coming on at a definite time after meals, usually two to four hours; (2) distress associated with free hydrochloric acid in the stomach; (3) distress which is relieved by the ingestion of food or alkalies. If a diseased appendix also is present, this triad of symptoms may be so masked that it is impossible to elicit the above history. Medical treatment will relieve the symptoms of ulcer but, if the appendix is infected, the ulcer will be activated again. If it is impossible to differentiate between these two conditions, medical treatment will sometimes relieve the symptoms of appendicitis also but, as a rule, this period of relief is very brief. Sometimes all three conditions are present and then all the pathology is usually discovered when the abdomen is opened.

SYMPTOMATOLOGY AND DIAGNOSIS OF CHRONIC APPENDICITIS IN CHILDREN

DUDLEY FOURNIER, M. D.
Phoenix, Arizona.

Presented before the April, 1927, meeting of the staff of St. Joseph's Hospital, Phoenix. Based on review of the case histories of patients operated upon in this hospital.

In review of the literature on chronic appendicitis in children I was surprised at the scarcity of the articles. There were many

excellent articles on acute appendicitis, and most of the writers believe that chronic appendicitis is not an uncommon disease, and that many cases are overlooked and diagnosed as other gastro-intestinal diseases. These diagnoses are not to be criticised, for the symptoms of the simple gastro-intestinal disorders in children are very similar to those of appendicitis. This, coupled with the lack of cooperation upon the part of the child and the difficulty in making a satisfactory examination, accounts for the many mistaken diagnoses.

Chronic appendicitis produces the same symptoms in children as in adults, but is much more difficult to determine. The appendix is situated relatively higher in the child and it may be found anywhere in the abdomen, so the pain and tenderness is not always in the lower right quadrant. Constipation is found in over three-fourths of the cases. Bilious attacks, so-called, and poor appetite are often due to chronic appendicitis. If the child does not gain weight satisfactorily, complains of stomachache, is irritable and is tender over the abdomen, we should suspect appendicitis, and a very careful physical examination and special inquiry for similar previous attacks should be made before giving the usual calomel and castor oil.

One of the main reasons why the examination of a child is unsatisfactory is that it is done in a hurried and brusque manner. With warm hands and very gentle palpation, you may palpate a relaxed abdomen that otherwise may be held rigid. A child normally likes to be held close to its mother and, if its knees are flexed, a very satisfactory examination of the abdomen may be made by facing the patient's back and palpating its abdomen between the child and its mother.

The diagnosis of acute appendicitis in very young children is usually made after the appendix is ruptured and peritonitis has developed.

No doubt many of these cases are mild and recover, but leave the appendix in a chronically inflamed condition. Stout reports a case, aged eleven months, that gave distinct history of attacks extending back to within two months of birth. The appendix was ruptured but there were numerous old adhesions from previous attacks. There was no doubt but that this baby had had a chronic appendicitis.

The colic due to indigestion or to indiscretions of diet may simulate appendicitis. It is usually of shorter duration, is relieved by pressure or an enema, and there is no localized tenderness.

The pain from a pneumonia, pericarditis or pleurisy, especially if the diaphragm is involved, is often referred to the abdomen. This pain is more constant and careful examination of the heart, pleura and lungs should be made.

The acute infectious diseases often cause acute pain in the abdomen. Tonsillitis is often associated with abdominal pain in children.

Right-sided pyelitis or a stone in the kidney or ureter at times causes pains in the lower right quadrant.

Gastro-enteritis closely simulates appendicitis, but it is usually associated with a diarrhea.

Intestinal obstruction and intussusception must be differentiated: the former, by its obstinate constipation; the latter, by the appearance of the characteristic bloody mucus in the stool, the sudden onset and the extreme prostration of the patient.

Mesenteric lymphadenitis, Brenneman says, is indistinguishable from appendicitis.

Osteomyelitis of the ilium and infections of the hip have similar symptoms.

Masses in tuberculosis of the abdominal lymph nodes, are found quite frequently in children. Dunham and Smith claim that they can readily be demonstrated by x-ray examination.

Kerley and Le Wald, of New York, have done valuable work in the use of the roentgen ray in the study of abdominal diseases in children, and it is their opinion that the retention of barium in the appendix after forty-eight hours is usually an indication of chronic appendicitis.

The so-called cyclic vomiting frequently seen in children, is due to chronic appendicitis in quite a few cases, and a careful inquiry and search should be made for tenderness in the right lower quadrant.

In this hospital during the past three years there were only five case reports of chronic appendicitis in children. The ages were 4, 7, 8, 11 and 14 respectively. The youngest, aged four, had symptoms of partial obstruction and pain in the right side. Repeated enemas relieved this condition. There was no mention made of any previous attacks. If a history of previous attacks can be obtained and placed on our records, it will aid materially in the differential diagnosis of these cases.

Case E. G., aged seven, had symptoms of tenderness over McBurney's point and a rigid right lower quadrant, with no history of previous attacks. From the history this may have been an acute attack.

Case M. D., aged eight, had pain, nausea and vomiting with three previous attacks,

and chronic constipation. The pathologist reported chronic appendicitis.

Case R. T., aged eleven, also had three previous attacks with tenderness over McBurney's point and muscular rigidity. Pathological report: chronic appendicitis.

Case E. F., aged fourteen, complained of pain in the lower right side, with nausea and vomiting, and extreme tenderness over the appendix.

The pathological report was chronic appendicitis. This case is on the border line and should probably be classed in the adult cases. This leaves only three cases operated upon and one recovering without operation.

Apparently chronic appendicitis in children is not very prevalent in this community or, at least, the cases are not hospitalized or operated upon.

SUMMARY

The diagnosis of appendicitis is difficult in children.

The diagnosis and early operation are more important in a child than in an adult.

Chronic appendicitis is mistaken for other gastro-intestinal disorders, and probably overlooked, more than any other disease of childhood.

CHRONIC APPENDICITIS PATHOLOGY AND X-RAY DIAGNOSIS

HARLAN P. MILLS, M. D.
Phoenix, Arizona.

Presented before the April, 1927, staff meeting of St. Joseph's Hospital, Phoenix. Based on study of patients in this hospital during three years past.

Regarding the changes occurring in the appendix as a result of chronic inflammation, there is a great variance in opinion. Some writers classify under this head appendices showing: (1) changes as result of previous acute inflammation—such as fibrosis, irregular thickenings, cicatrices, kinks, strictures and obliterated lumen; (2) changes due to simple low grade inflammation, productive of many of the findings mentioned above, especially that of fibrosis and obliteration of lumen. Others recognize as chronic appendicitis only those inflammatory processes which are chronic from the first, and whose etiology is definitely apparent, as tuberculosis.

If the changes mentioned under the first heading are to be considered as the findings of chronic appendicitis, the condition is a relatively common one, as the majority of appendices of adults removed at operation show one or more of the changes mentioned. If we apply the term only to tuberculous appendices, we have a very small group,

comprising relatively few of the appendices removed at operation.

A prominent radiologist, in a recently published article¹, stated that "chronic inflammation of the appendix exists almost entirely as a tuberculous appendicitis." Another writer says², "There are practically no chronic inflammations in the appendix with the rare exception of tuberculosis." This writer, however, continues by saying, "There are many chronic changes resulting from previous or recurrent inflammations; such as, scar tissue, fibrosis, adhesions and obliterative changes." In the following paragraph of his article, he outlines the x-ray signs of these chronic changes.

On the other hand, Moschcowitz³, in his article on appendicitis, includes a large group under the classification of chronic appendicitis, basing his conclusions upon a study of a large amount of tissue material in conjunction with the clinical findings. He shows quite conclusively that the cellular changes which we usually portray as making up the microscopic picture of chronic appendicitis, may be traced back to their origin in acute, subacute or recurrent inflammations. He considers that a subacute or chronic appendicitis is a healing or healed inflammation of the appendix, the gross and cellular changes representing an effort of nature to repair damage done by acute or recurrent inflammations. The term "healing" and "healed" are used in a pathological sense and not clinically.

From a study of the articles mentioned and other recent literature, it seems evident that the apparent difference of opinion is rather a difference in terminology, all agreeing that there are chronic changes in the appendix productive of clinical symptoms; but not all agree as to the sequence of events leading to these changes.

For the past several years, the pathologist of this hospital, in his tissue reports, has included, under the classification of chronic appendicitis, this larger group of tissue changes. These pathological findings may be outlined as: (1) Atrophy of glandular portion of the mucosa and obliteration of the crypts, associated with either narrowing or widening of the lumen, the latter usually in the form of irregular dilatations. This change is considered to be the result of previous acute inflammation which progressed to the point of necrosis, at least of portions of the mucosa. (2) Widening of the submucous fibrous layer. This represents early or incomplete fibrosis as part of the healing process. (3) Infiltration of the muscular coats with new fibrous tissue, as a healing process of a diffuse inflammation of the

walls. Later this contracts causing irregularity of contour, stricture of lumen and kinking. (4) Thickening and deformity of the peritoneal coat due to the organization and fibrosis of exudates. (5) Marked, diffuse narrowing of the lumen or complete obliteration as an end result of the healing process by fibrosis. (6) Inflammatory infiltration of the walls, usually nodular and frequently confined to the distal end, and showing characteristic lesions of tuberculosis. In tuberculous appendicitis there is often marked proliferation of fibrous tissue, and a greatly enlarged appendix results. Tuberculous appendicitis is relatively rare and is found secondary to pulmonary or to other intestinal involvement.

In addition to these findings which are considered as inflammatory in character and origin, there are other changes which are mechanical in origin, or partly mechanical and partly inflammatory.

(1) Fixation or loss of normal mobility, usually associated with reduced mobility of the cecum; or, if affecting the appendix alone, usually the result of pelvic inflammation. This fixation leads to loss of ability to empty itself normally, causing stasis of contents, dilatation of lumen and often kinking and points of constriction.

(2) Abnormal position. We do not recognize a definitely normal position for the appendix in relation to the cecum, but there are positions, especially if fixed, that tend to induce changes that are symptom producing. Of these may be mentioned a position over the brim of the pelvis, or a post-cecal position. The muscular activity is interfered with and stasis and dilatations result.

(3) The presence of fecaliths in the lumen of the appendix. The development of fecal concretions probably occurs as a result of stasis and inspissation of fecal material within the lumen, through lack of normal peristalsis. Occasionally these concretions form about small foreign bodies lodged in the appendix. These fecaliths may cause no symptoms unless of sufficient size or so located that they interfere mechanically with peristalsis or, by valve-like effect, cause retention of infectious material. Such an occurrence is not unusual as an apparent cause of acute appendicitis; so that we have abundant ground for the opinion that a poorly drained appendix is a dangerous appendix.

X-RAY EXAMINATION IN THE DIAGNOSIS OF CHRONIC APPENDICITIS

The ability to show, by the x-ray, evidence of the above mentioned changes, has led to the frequent application of this meth-

od of examination in cases of suspected chronic appendiceal disease. In such an examination, we recognize two groups of signs pointing to changes in the appendix, indirect and direct. The former refer to evidences found in other parts of the gastro-intestinal tract, and, therefore, an examination of the appendix should include a complete gastro-intestinal examination, otherwise these evidences will not be available. As indirect signs, may be mentioned: (1) pylorospasm with associated delay in emptying of the stomach, (2) spasm and hypermotility of the duodenal cap, (3) ileal stasis with delay in filling of the cecum, (4) spasticity of the colon. These signs are considered as reflex in origin and are not to be taken as conclusive evidence in themselves, but should be given value when taken in conjunction with direct signs and positive history.

The direct signs are: (1) tenderness located definitely in the appendix by direct manipulation when its lumen is outlined with barium and visualized under the fluoroscopic screen. (2) Fixation or reduced mobility, often associated with immobility of the cecum. This sign is of greater importance when there is also tenderness on manipulation or definitely abnormal position. (3) Kinking or irregular filling of the lumen. This finding is considered as pointing to changes which have interfered with the peristaltic action and hence with the emptying of the appendix. (4) The demonstration of fecaliths in the lumen. This finding is of more value if there is evidence of dilatation of the lumen distal to the fecalith or if associated with delayed emptying of the appendix. (5) Obliteration of lumen of the appendix cannot be demonstrated by the x-ray examination, but can only be surmised when the appendix can not be made to fill after a barium meal and barium enema. Often only a small proximal portion of the lumen is outlined, the distal portion being obliterated.

When one or more of these signs are found in an x-ray examination and are properly interpreted in relation to the individual patient, they are of the highest value in arriving at a diagnosis of chronic changes in the appendix.

REFERENCES

- (1) Orndoff: Roentgen Ray Studies of the Appendix, Cecum and Ascending Colon. J. A. M. A., Oct. 16, 1926.
- (2) White: The Clinical Importance of Chronic Changes in the Appendix. A. J. of Roentgenology, Jan., 1925.
- (3) Moschowitz: The Pathological Diagnosis of Disease of the Appendix, Based on the Study of 1500 Specimens. Annals of Surgery.

MEDICAL AND SURGICAL ASSOCIATION OF THE SOUTHWEST

Minutes of General Business Session November 5th.

This meeting was held at the luncheon hour on Saturday, November 5th.

Report of the Secretary-Treasurer

The members on our list at the beginning of the year numbered 236. Of these, we have lost by death, two; by resignation, three; dropped for non-payment of dues of three or more years—seven.—leaving a net membership of 224. Of these, thirty-four had not paid their dues on Nov. 1st. Several of these have paid up at this meeting. At this present meeting, there have been received 74 applications for membership, giving us a total net membership of 298, divided as follows:

From El Paso and environs.....	79
From New Mexico.....	79
From Arizona.....	119
.....	13
Miscellaneous	8
Total.....	298

This is the longest stride we have made toward our goal of 500 members. All credit must be given to our president, Dr. W. W. Waite, and his co-workers in El Paso, in securing these applications. We have approximately 750 doctors in the southwest who are eligible for membership in this association, so that our goal of 500 is not unreasonable.

With regard to the finances of the Association. It will be recalled that the secretary suggested, several years ago, that so long as he retained the dual office of secretary of this Association and editor of the official journal, he would combine the financial resources of the two enterprises. Until we have a larger membership, this Association will show a deficit in its general fund, which will be met out of the funds of the journal. As a matter of fact, the congress of this year has drawn heavily upon the funds of Southwestern Medicine. We feel that this organization and our journal so interweave in their mutual interests, that this method of financing serves the best interests of both. For that reason, the treasurer has not, for several years, tried to segregate the expenses of this Association from the editorial and clerical expenses of the journal. The bank account of the combined organizations, carried in the name of Southwestern Medicine came perilously near to being obliterated by the heavy publicity campaign for this congress. The large influx of new members will restore that account to health,—like a blood transfusion.

Report of the Editor

The business affairs of Southwestern Medicine are in a healthy condition. The business department is entirely in the hands of competent publishers, who collect for the advertisements and conduct the entire business department, with consultations on mooted points with the editor.

Our present business arrangement allows us forty pages of reading matter, for which we pay the publishers \$50.00 per month, in addition to the advertising income which they collect directly from the advertisers. This is more space than we have been able to secure material to fill during the past year, so that we can not, at this time, see any reason for asking for further reading.

The editorial staff suffered loss, during the year, by the removal from New Mexico of Dr. C. M. Yater, whose interest and untiring effort as associate editor was an inspiration and joy.

The addition of an associate editor from Arizona

has been a great benefit to the journal. Dr. Orville H. Brown of Phoenix, who has had much experience in editorial work, furnishes the book reviews, the current literature reviews, and abstracts.

Dr. Orville Egbert, of El Paso, is proving to be an excellent selection for associate editor from El Paso county. He is prompt and energetic, and the editor greatly appreciates his interest and help.

Our need, as it has been, is now and ever will be, until the editorial millenium arrives,—

(1) Reports of county society meetings, with the papers there presented, or full abstracts of their proceedings.

(2) Case history reports.

(3) Personal news items.

In closing, we wish to say again, like an ever recurring echo, that the journal can NEVER reflect, as it is designed to, the medical activities and the medical and surgical work of the southwest, until we can get such reports for publication.

Report of the Committee on Necrology

In formulating a resolution on necrology, it must be remembered that not all members of the profession in the southwest are members of this association. Therefore, we frequently appear to overlook mention, in our records, of the passing of some valuable and even eminent member of the profession, for this reason.

Among the losses, by death, from the professional ranks in the southwest, during the past two years, there are two who were members of this association, namely: Dr. J. M. Richmond of El Paso, and Dr. James R. Davis, of Silver City, N. M.

In the passing of these two members, the association, together with the profession of their communities, have suffered loss. With the families of these two members, and with their local confreres, we join in expressing our sorrows, and instruct that this expression be recorded on our minutes.

Motion was made and carried that this report be adopted and spread on the minutes of the Association.

Report of Committee on Meetings and Constitution

This committee has thoroughly discussed the problems of meetings, and suggests that all such problems be left to the Program Committee for next years, and that provision for this committee be made by amendment to the constitution, under the duties of the board of trustees, by providing as follows:

The Board of Trustees shall, with the president and secretary of the Association, serve as the Program Committee. This committee shall provide the program for the annual session and shall, in conjunction with the committee on arrangements of the entertaining local society, make all arrangements for the annual convention of the Association.

We recommend, also that the section in the constitution providing for the qualifications of members, be amended by adding the following:

Applications from practitioners living in counties where there are no county societies, may be accepted on approval of the board of trustees.

Motion was made that this report with its recommendations as to revision of the constitution be adopted; motion was seconded and carried.

Report of the Committee on Resolutions

Your Committee on Resolutions regards the present meeting now drawing to a close as a red letter one in the history of our Association, and wishes to offer the following resolutions:

Whereas,—many physicians and surgeons of national and international reputation have sacrificed

time and substance to bring to the southwest their wealth of knowledge and experience,—

Be It Resolved,—that the membership of this Association, and the entire medical profession of the southwest, tender their sincere thanks and appreciation to each physician and surgeon who has so generously assisted in this clinical congress,—and the secretary is instructed to send a letter of appreciation to each of them. Each distinguished be made honorary member of the association.

Whereas,—many men in public life, in El Paso city, in Texas and in New Mexico, have lent very material assistance in obtaining desirable speakers from the United States Public Health Service, this Association wishes to express its appreciation of this valuable service and the secretary is instructed to express to each senator, congressman and other layman who has taken an interest in the success of this meeting, and to the United States Public Health Service, our appreciation of their service to our program committee.

Whereas,—The El Paso County Medical Society has so generously assumed the entire expense of this congress and has so whole-heartedly entertained us with their characteristic hospitality,—it is resolved that we record on the minutes of the Association, our sincere appreciation to the El Paso County Medical Society, and to each and every member thereof, and especially to the chairmen of the various committees who have worked so faithfully to make the meeting a success.

To the newspapers of El Paso, who have so generously and judicially reported our proceedings and meetings, we owe a vote of thanks, and it is resolved that we express, by letter, and by record on our minutes, our appreciation of their courtesy and fine discrimination, as well as their generous allotment of space in the news columns.

To the Hotel Hussman, where the Association has been entertained, we are grateful for their efficient and courteous entertainment, which has added much to the pleasure and efficient conduct of our meetings.

Lastly, and by no means, least, to the president of the Association, Dr. Willis W. Waite, and to that war horse and untiring chairman of the general committee, Dr. Hugh Crouse, we owe special thanks for the very unusual, unique and educational program of this session, and it is resolved that a special expression of our appreciation be recorded on our minutes for them.

Motion was made and carried that these resolutions be adopted as the unanimous expression of the Association.

Dr. Orville Egbert presented the following resolution:

Whereas, the coordination of the various health activities of the federal government is vitally important to the health of the nation, and

Whereas, the United States Public Health Service is best fitted to act as the nucleus around which such co-ordination shall take place.

Therefore, be it resolved, that the Medical & Surgical Association of the Southwest hereby unqualifiedly endorses the Parker Bill now pending in the House of Representatives of the United States, and urges upon the senators and representatives of the several states represented in this Association the speedy enactment of the Parker bill into law.

And, be it further resolved, that the secretary be and is hereby directed to communicate to the said senators and representatives the desires of the Association in this matter.

Dr. Colby Rucker explained the purposes of the Parker Bill, referred to in this resolution, stating that it has the approval of all

organized medical bodies. Upon motion, duly seconded, the resolution was adopted and the secretary instructed to carry out its provisions.

The election of officers being declared the next order of business, Dr. J. M. Greer of Phoenix, Ariz., nominated Dr. Hugh Crouse of El Paso, the nomination being seconded by Dr. F. B. Evans, of Alamogordo, N. M. Dr. Crouse was elected by acclamation.

For first vice-president, Dr. P. G. Cornish, Jr., of Albuquerque, N. M., was nominated and elected viva voce.

For second vice-president, Dr. J. M. Greer, of Phoenix, Ariz., was nominated and elected viva voce.

Dr. W. Warner Watkins of Phoenix, Ariz., was re-elected secretary-treasurer.

Invitations had been received from Amarillo, Texas, and from Albuquerque, N. M., for the 1928 meeting. Motion was made that this meeting be held at Albuquerque and that a letter of thanks be sent to Amarillo for their invitation. This motion was carried.

There being no further business, adjournment was taken sine die.

THE MEDICAL AND SURGICAL ASSOCIATION OF THE SOUTHWEST

Membership List
November 15, 1927

Adams, C. W., Globe, Ariz.
Adamson, E. W., Douglas, Ariz.
Ahumada, Francisco, El Paso, Texas.
Aldana, J. Jimenez, Miami, Ariz.
Allison, Dwight, Las Cruces, N. M.
Anderson, W. H., El Paso, Texas.
Audrain, L. C., Los Angeles, Calif.
Austin, C. B., Lordsburg, N. M.
Austin, C. P., Lordsburg, N. M.
Bacon, John E., Miami, Ariz.
Bailey, H. T., Phoenix, Ariz.
Bakes, E. C., Phoenix, Ariz.
Bannister, Kimball, Phoenix, Ariz.
Barnes, F. M., El Paso, Texas.
Barrett, F. O., El Paso, Texas.
Baz-Dresch, Enrique, Parras, Coah., Mexico.
Bessette, A. E., San Marcial, N. M.
Bledsoe, N. C., Bisbee, Ariz.
Bouldin, T. J., St. Johns, Ariz.
Bradley, R. L., Roswell, N. M.
Branch, W. M., El Paso, Texas.
Brehmer, H. L., Albuquerque, N. M.
Bridge, George A., Bisbee, Ariz.
Briley, James H., Duncan, Ariz.
Britton, J. M., El Paso, Texas.
Britton, W. W., El Paso, Texas.
Brock, C. L., Albuquerque, N. M.
Brockway, G. M., Phoenix, Ariz.
Brosier, A. E., Amistad, N. M.
Brown, A. F., Ft. Sumner, N. M.
Brown, C. P., El Paso, Texas.
Brown, Edgar H., Phoenix, Ariz.
Brown, O. E., Tucumcari, N. M.
Brown, O. H., Phoenix, Ariz.
Brown, Oscar S., Winslow, Ariz.
Brown, Robert O., Santa Fe, N. M.
Brown, W. L., El Paso, Texas.
Brunner, George, El Paso, Texas.

- Butler, J. I., Tucson, Ariz.
 Butler, P. M., Winkelman, Ariz.
 Byrd, E. L., Clint, Texas.
 Camp, Jim, Pecos, Texas.
 Cantrell, W. B., Gallup, N. M.
 Carhart, W. G., Whipple, Ariz.
 Carlson, A. C., Jerome, Ariz.
 Carson, H. R., Phoenix, Ariz.
 Casellas, P. Ramos, El Paso, Texas.
 Cathcart, J. W., El Paso, Texas.
 Causey, Z., Douglas, Ariz.
 Clark, E. B., El Paso, Texas.
 Clohessy, T. T., Phoenix, Ariz.
 Clyne, Meade, Tucson, Ariz.
 Cohenour, L. B., Albuquerque, N. M.
 Colby, E. G., San Diego, Calif.
 Comer, M. C., Tucson, Ariz.
 Copeland, J. A., Wickenburg, Ariz.
 Cornish, P. G., Sr., Albuquerque, N. M.
 Cornish, P. G., Jr., Albuquerque, N. M.
 Couch, G. B., Phoenix, Ariz.
 Crouse, H. W., El Paso, Texas.
 Cruthirds, A. E., Bisbee, Ariz.
 Culpepper, M. B., Carlsbad, N. M.
 Cummins, E. J., El Paso, Texas.
 Daniel, D. C., Mosquero, N. M.
 Danielson, R. W., Hanover, N. M.
 Davis, Augustus, McCammon, Idaho.
 Davis, S. C., Tucson, Ariz.
 Davis, W. J., El Paso, Texas.
 Diver, F. C., Dawson, N. M.
 Dodds, David C., Albuquerque, N. M.
 Dostal, R. J., Jerome, Ariz.
 Dryden, R. C., Pima, Ariz.
 Duncan, C. G., Socorro, N. M.
 Duncan, E. A., El Paso, Texas.
 Eckles, S. H., Tucson, Ariz.
 Egbert, Orville, El Paso, Texas.
 Ellis, W. C., Phoenix, Ariz.
 Espinosa, Tobias, Espanola, N. M.
 Evans, F. B., Alamogordo, N. M.
 Fisher, E. M., Roswell, N. M.
 Fitzgerald, G. H., Bisbee, Ariz.
 Flaningam, C. E., La Mesa, N. M.
 Flinn, John W., Prescott, Ariz.
 Fournier, Dudley, Phoenix, Ariz.
 Frazin, N. D., Silver City, N. M.
 Fronske, M. G., Flagstaff, Ariz.
 Funk, Z. E., Santa Rosa, N. M.
 Gallagher, Paul, El Paso, Texas.
 Gambrell, J. H., El Paso, Texas.
 Garduno, J. L., Albuquerque, N. M.
 Garrett, F. D., El Paso, Texas.
 Garrison, I. L., Phoenix, Ariz.
 Gay, W. W., El Paso, Texas.
 Geer, R. H., El Paso, Texas.
 Gekler, W. A., Albuquerque, N. M.
 Gibbs, M. D., Roy, N. M.
 Gillick, D. W., Mescalero, N. M.
 Goodrich, G. E., Phoenix, Ariz.
 Goss, H. L., Phoenix, Ariz.
 Gotthelf, E. J., Tucson, Ariz.
 Greer, J. M., Mesa, Ariz.
 Gudgel, H. B., Phoenix, Ariz.
 Gunter, Clarence, Globe, Ariz.
 Gutierrez, C. T., Tucson, Ariz.
 Haffner, S. M., El Paso, Texas.
 Hanks, S. J., Hurley, N. M.
 Harbridge, D. F., Phoenix, Ariz.
 Hardy, John A., El Paso, Texas.
 Harper, T. C., Globe, Ariz.
 Harris, H. A., Empalme, Son., Mexico.
 Harris, S. T., El Paso, Texas.
 Hatcher, J. O., Hillstoro, N. M.
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Members Lost—1927.

By Death

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 Richmond, J. M., El Paso, Texas.

By Resignation

Bergmans, J. J., Taos, N. M.
 Smallhorst, D. E., Los Angeles, Calif.
 Yater, C. M., Cleburne, Texas.

By Non-Payment of Dues

McLandress, G. S., Long Beach, Calif.
 Palavicini, Manuel E. G., Parral, Chih., Mexico.
 Parlett, Roger V., Albuquerque, N. M.
 Sorcini, A. Lopez, Mexico City.
 Tarr, Earl M., Los Angeles, Calif.
 Trevino, Alberto, New York City.

PROCEEDINGS OF THE THIRTEENTH ANNUAL MEETING OF THE MEDICAL AND SURGICAL ASSOCIATION OF THE SOUTHWEST, HELD AT EL PASO, TEXAS, NOVEMBER 2-5, 1927.

(Continued from November issue)

Clinical Luncheon—November 2, 1927

Dr. Harry S. Crossen, of St. Louis, being introduced as the first speaker, made the following remarks on "Bleeding Myoma."

"I wish to say, first, that I am delighted to be here with you. This is my first trip this far south in the desert area and the strange vegetation that you have and the barren mountains are all new to me and exceedingly interesting. As it happens, the times that I have been to California I have gone over the northern route and I now see that I have missed a good deal in doing so. I am very much interested in non-medical as well as medical subjects and see that you have plenty of both.

When I was asked to speak today, of course after being entertained so well, I could not refuse. The next question was as to what subject, and it occurred to me that some remarks on the treatment of patients with bleeding myoma might be of interest to you. It is only the emergency type I am going to speak of, and we have worked out a very simple and effective plan of handling it.

The patient with a bleeding myoma constitutes a serious situation. In order to avoid fatality, it is imperative of course to stop the bleeding and yet

it is not permissible to use any operative measure that might be dangerous to that small remaining spark of vitality. Of course, it is important to use the immediate measures, blood transfusion, glucose intravenously, hemostatic injections and drugs, to stop bleeding temporarily, but when you have done all that there still remains the stopping of the bleeding permanently. Yet, until the patient can be built up, you cannot do a radical operation.

We consider these first steps important, when first seeing such a patient, but our plan is to stop right there and not examine further until we can get her into the hospital. We do that because we might start a bleeding which will further weaken her and it is important to avoid any further bleeding and get the patient directly to the hospital. When she arrives there, the patient is given a dose of sedative, usually hyoscin or morphine; she is prepared for vaginal operation, taken to the operating room and then with everything handy to stop what bleeding might ensue, we can go ahead and cut the tumor off. The clamp is removed in twenty-four to thirty-six hours, and usually that takes care of the bleeding. This is a very simple procedure, whenever you find a tumor in the vagina.

The next type is tumor up in the canal. In such a case the probability is we will have to divide the cervix. The division of the cervix of course means lifting the bladder off of it. For division of the vaginal wall, we use hyoscin morphine sulphate and inject a little adrenalin-novocain. After that we divide the cervix up far enough to palpate the tumor to determine its attachment.

The other type in the same class is that in which we find the tumor is attached by a broad base to the wall of the uterus. In such a case, with the internal os divided, the tumor removed and rolled out, take care to catch the capsule as you proceed with the operation step by step so that no bleeding tissue gets away from it after the tumor is removed. Of course you have to get rid of this bleeding tumor or you will not stop the bleeding, and it is necessary to remove it in order to really stop the bleeding. It can be done simply under morphine hyoscin. After the capsule has been cleaned off, if the capsule has not been very vascular, you can remove the forceps one by one. If it is a very vascular capsule, you can bring it down as you put in sutures. Should you find that is not possible, we can leave enough forceps on to control hemorrhage. This is a very simple procedure for these two types of cases and usually takes care of them without further trouble.

The third type is that at which you do not feel any tumor in the vagina or canal, and the bleeding is from the body. In that case of course in addition to the bleeding of the supposed myoma, there comes the question of possible malignancy. We curet the patient to give us tissue for microscopic examination. At the same time we put in radium. That patient is given a minimum dose of radium, 1500 to 1800 milligram-hours and the curettings are examined microscopically. If we find no malignancy that is all we have to do, because as a rule, this procedure takes care of them. If we can stop the bleeding for a time until the patient is strong enough for the radical operation, that takes care of the immediate problem in practically all of these cases—it tides the patient over until she can be built up and the operation carried out. There are several cases in which operation seems necessary at the time seen, but when the bleeding is stopped and the patient is built up, operation is then not needed.

There are two other points which perhaps I should mention. In putting radium into the uterus, if the cana is long and the cervix rather tight, it

is a good plan to put in a drainage tube and leave it, as long as the patient is in the hospital, to prevent swelling.

The other point is that in certain cases, even with repeated packing, bleeding may continue. If such is the case when the packing is removed and radium removed, another packing is put in and that packing is changed several times.

In those cases where there is extensive bleeding in spite of these packings, we do two of the radium treatments supplemented by moderate dose of X-ray."

As the second speaker for this luncheon, Dr. Francis M. Pottenger, of Monrovia, Calif., was introduced. His remarks on the "Treatment of Tuberculosis" was, in part, as follows:

"I hate to go back to this unpleasant subject again, after this pleasing diversion. The modern treatment of tuberculosis, the beginning of symptomatic treatment, goes back to 1859, when Bevnier established his sanitarium in Germany. Prior to that time there had been one attempt in England to put tuberculosis patients in institutions, but this did not last, and Bevnier's establishment was the first permanent effort made for treatment of this disease. He based his idea of the curability of tuberculosis on an entirely wrong conception, which was that the patient had a small heart and exercise would increase the size of the heart, and thereby overcome the disease. However, in spite of his wrong conception, he was very careful in what he gave his patients to do. He built his institution at the bottom of a hill, constructed paths of varying length around the hill, and would have his patients walk so far each day, gradually increasing the distance. He placed benches along the way for them to rest when tired and, in spite of the fact that his ideas of exercise were all wrong, yet by isolating the patient and taking him away from home and out into the open air, he made a good record.

Shortly after that, Peter Detwiler contracted tuberculosis and became one of Bevnier's pupils, and was his assistant for seven years. After that he established an institution of his own in the Black Forest. While Bevnier looked for the sort of exercise he thought tuberculous patients should have, Detwiler claimed that rest was the cure for tuberculosis, and was the first leader in advocating the rest cure.

When I first became interested in tuberculosis, in 1895, the theory of exercise was still being taught in this country, and practically every physician who had anything to do with tuberculosis at that time, told you to get your patients out into the open air and exercise them. So, in 1895, we had not yet learned the ideas of Detwiler, and by the time those ideas reached America, they had made good headway in Europe. Later, we began earnestly, in this country, to advocate the rest cure, and along with the rest theory went the idea of open air. Then followed the theory of stuffing, giving all kinds of food and twice as much as the patient could digest and assimilate. We had no real conception of what we were doing, but now we have come to the place where we can give a fairly accurate reason for the things we are doing, based on a better understanding of the pathology and clinical course of tuberculosis.

In order to understand it, we must always remember that we have a twin infection. There is a great difference between the primary infection and the reinfection that takes place afterwards, and this difference between the primary infection and the secondary infection with the reaction of the body towards the latter, is the key to what we

are trying to do in the cure of tuberculosis. When the primary infection takes place by slight inoculations, after two or three weeks an immunity becomes established, which can be demonstrated by hypersensitivity of the skin to tuberculin. Clinical tuberculosis is a secondary inoculation, and when we are thinking about the curability of tuberculosis, we are thinking about the treatment of a reinoculation following an infection which has established immunity, and we are dealing with an immunity reaction, rather than a primary infection. When we examine a patient with clinical tuberculosis and when we go over the chest, we find perhaps a widespread area of rales and moisture in that lung. On the x-ray film, we will see a snowstorm, as we call it, or a widespread exudative lesion. If that were all active tuberculosis due to living bacilli invading new lung tissue, the patient would have no chance. But very probably it is due to a reinoculation, with reaction in every old focus. This reaction may take place in the apex, or throughout all the areas of the lung where the disease is unhealed.

The method of healing in these two kinds of lesions is very different. The exudative lesion heals by resolution, or where there is very extensive involvement, it may heal by cavitation; at least there will be some necrosis and cavitation may or may not take place.

The thing we should try to do in tuberculosis is to make early diagnosis and begin early treatment in all cases. You can readily see that the larger the area the more opportunity there is for extension to take place, and the more serious will be the process. What does rest do in these cases? It is perfectly simple what happens. In a patient with extensive tuberculosis, we have a reaction around a focus of infection which is open, with bacilli escaping through into the tissues. If the patient is put at rest, he uses a minimum amount of blood in that lung, and we save him the absorption of a very large amount of toxin. It requires twenty per cent more energy to sit in a chair than to lie on a couch and that means twenty per cent more blood through the diseased area. For walking around, six to eight times more oxygen and blood is required, than when at rest, and correspondingly more food. Consequently, when we put a patient at rest, we secure the minimum danger of extension, and improve the individual to that extent.

In the question of open air, we have learned a great deal in the last few years. Some one got the idea that cold air would improve tuberculosis, and they were talking about building sanatoriums in Alaska and up around Hudson Bay, because they thought there was something in the cold open air that would cure. We have learned that it is not the cold air, nor the amount of oxygen in the air, because we could all sit in this room for the next twenty-four with the windows closed, and there would still be sufficient oxygen to take care of our needs. We know now that it is the impact of the air in motion on the body that helps, and not the amount of oxygen.

We are gradually becoming sane on the question of food. The patients have an idea that the fatter they get, the better they are, and you may be sure they will overeat. My rule is to have them gain back to their normal weight and then hold that weight on the least amount of food they can. My experience has been that if they are allowed to eat as much as they can, this is fifty per cent more than they should eat.

Rest is the most important thing that can be given to the patient with active tuberculosis. Any man will do his patient the greatest amount of good, if he will put that patient at rest immediate-

ly. Yet, there comes a time when exercise is just as valuable. Exercise is the natural state of the human being, and it is unnatural for any man to lie down on a couch for two or three years, and it cannot be done without damage to the organism. It is my rule, as soon as the activity is over, to have my patients begin taking exercise. This should not be to the extent that it will make him short of breath or tire him. He begins by sitting up, increasing the time of this until he is up for about three hours each day; then he is started very gradually on walking. I try to get every patient, according to his condition, to the point where he is walking at least a mile every day, and sometimes up to ten miles, before discharging him. If you build up physical resistance in this way, before they are discharged, patients can go right into two or three hours of work a day without harm.

As to the question of climate, there is no need to speak. Here in the Southwest, we know climate is a big advantage. You can say all you please about the patient being able to get well from tuberculosis anywhere, but it is a great deal more comfortable and a great deal easier to recover in the Southwest, where there are not so many variations in temperature. The sunshine we have here, and the conditions of the atmosphere, are far better than in climates where there are great changes from day to day. So, when we talk about there being nothing in climate, we do not know our physiology; and when we say there is everything in climate, we do not know our medicine.

Thoracoplasty and pneumothorax are very important for the benefit of a certain group—a group that we would otherwise lose out in. That group will now grow larger, as we come to know these measures better and their benefits more.

There is one final thing to which I want to call attention and that is to remember that you are not simply treating tuberculosis, but you are treating a tuberculous PATIENT. I think we have our minds too much on the bacilli, when we ought to have them more on the individual with the disease, and on the problems he has. His financial problems,—being taken suddenly away from home, away from his family, friends and work, and being forced to readjust his whole life, tends to give him a gloomy outlook. If a young mother, she has to face the problem of getting up and living apart from her child, her home and relatives, nor for a month or two, but for six or nine months, or maybe two or three years. The readjustments,—financial, domestic, business, with all the discouragement and gloom that comes with the doubt as to whether the patient is to recover, are the real problems the tuberculous patient has, and the physician who is the most successful is the one who helps his patients in this way as well as in their physical condition.

The Clinical Congress convened at two o'clock, in the Crystal Room, with Dr. Ralph Matson, of Portland, Ore., as the first lecturer. Dr. Matson spoke on the "Thoracoscopic Handling of Pleural Adhesions," showing instruments and explaining the procedure in detail, using many slides of radiographs showing the various types of pleural adhesions, with conditions before and after such treatment.

The second speaker of the afternoon was Dr. Frank Hinman, Professor of Urology of the University of California, San Francisco;

(Continued on page 561)

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THE PARKER BILL

Members of the profession over the Southwest are urged to read carefully the text of the Parker Bill printed below, and to write the representatives (senators and congressmen), from their respective states, urging support of this measure.

This Bill is of particular interest to the Southwest, because it will permit us to secure the aid of experienced health officers, without cost, to help solve the problems of epidemics or endemics, when they occur. Usually our health departments do not have appropriations to meet these emergencies and have no method of coping with them. For example, the poliomyelitis epidemic in New Mexico came without warning, and the Department of Health was forced to borrow money with which to meet the expense of the physiotherapist who is doing such a valuable work in that state. In the fatal fever epidemic in Phoenix in 1922, a worker was sent to Phoenix but only because the Public Health Service was especially interested in that disease.

The Public Health Service is not sufficiently mobile at present to meet emergencies which arise. The proposed reorganization will not mean additional expenditures, but will mean more efficient service to those sections which most need that service.

The proposed Bill reads as follows:

TEXT OF PARKER BILL A BILL

TO PROVIDE FOR THE CO-ORDINATION OF THE PUBLIC HEALTH ACTIVITIES OF THE GOVERNMENT, AND FOR OTHER PURPOSES.

BE IT ENACTED BY THE SENATE AND HOUSE OF REPRESENTATIVES OF THE UNITED STATES OF AMERICA IN CONGRESS ASSEMBLED, That whenever the President finds that it will promote greater efficiency in the conduct of the public health activities of the Govern-

ment, he is authorized, by Executive order, to transfer to the Public Health Service all or any part of any executive agency (other than an agency of the military or naval forces, the War Department, the Navy Department, or the United States Veterans' Bureau) engaged in carrying on a public health activity. Any such Executive order shall also designate the records, property (including office equipment), personnel, and unexpended balance of appropriations to be transferred.

SEC. 2 (a) The President is authorized, by Executive order, to direct that officers or employees of the Public Health Service shall be detailed to any other executive agency which is carrying on a public health activity, in order to supervise or co-operate in such work.

(b) Upon the request of the head of an executive department or an independent establishment which is carrying on a public health activity, the Surgeon General of the Public Health Service is authorized to detail officers or employees of the Public Health Service to such department or independent establishment, in order to supervise or co-operate in such work.

SEC. 3. (a) The Surgeon General of the Public Health Service is authorized to detail medical or scientific personnel of the Public Health Service to educational and research institutions for special studies of scientific problems relating to public health and for the dissemination of information relating to public health, and to extend the facilities of the Hygienic Laboratory to health officials and scientists engaged in special study.

(b) The Secretary of the Treasury is authorized to establish such additional divisions in the Hygienic Laboratory as he deems necessary to provide agencies for the solution of public health problems, and facilities for the co-ordination of research of public health officials and scientists and for demonstrations of sanitary methods and appliances.

SEC. 4. (a) The Secretary of the Treasury is authorized to transmit to Congress estimates of the amounts necessary for the construction, on the site now occupied by the Hygienic Laboratory, of buildings adequate for the Public Health Service.

(b) The administrative office and bureau divisions of the Public Health Service in the District of Columbia shall be administered as a part of the departmental organization, and the scientific offices and research laboratories of the Public Health Service (whether or not in the District of Colum-

bia) shall be administered as a part of the field service.

SEC. 5. (a) Hereafter sanitary engineers, dental officers and scientists of the Public Health Service, selected for general service and subject to changes of station, shall be appointed by the President, by and with the advice and consent of the Senate, subject to the same conditions and limitations as medical officers of the Public Health Service, except that—

(1) Examinations shall be in the several branches of the profession of the person to be appointed;

(2) Any sanitary engineer, medical, dental, or other scientific officer in the Public Health Service upon the date of passage of this Act, or transferred to the Public Health Service under the authority of this Act, after examination by a board of officers convened by the Surgeon General of the Public Health Service, and upon the recommendation of such board and the Surgeon General, may be appointed to any grade designated by such board and approved by the Surgeon General; and in computing longevity pay and pay period the service of any such officer shall be counted in the same manner as though he were in the service on June 30, 1922;

(3) Whenever in the opinion of the Surgeon General of the Public Health Service commissioned officers are not available for the performance of permanent duties requiring highly specialized training and experience in scientific research, including the duties of chiefs of divisions of the Hygienic Laboratory, any person, after examination by a board of officers convened by the Surgeon General of the Public Health Service and upon the recommendation of such board and the Surgeon General, may be appointed to any grade designated by such board and approved by the Surgeon General.

(b) The Surgeon General of the Public Health Service shall designate the grades of commissioned officers of the Public Health Service other than medical officers, corresponding to the grades of medical officers.

(c) Hereafter commissioned officers of the Public Health Service shall be entitled to promotion according to the same length of service as officers of corresponding grades of the Medical Corps of the Army, and the Surgeon General of the Public Health Service shall have the equivalent rank of, and shall be entitled to the same pay and allowances as, the Surgeon General of the Army.

(d) The limitation now imposed upon the number of Assistant Surgeons General and senior surgeons of the Public Health Service, on active duty, is hereby repealed.

(e) Hereafter officers of the Public Health Service in the grade of Assistant Surgeon General on field service shall be designated and known as medical directors.

SEC. 6. Hereafter the Secretary of the Treasury shall appoint, in accordance with the civil-service laws, all officers and employees, other than commissioned officers, of the Public Health Service, and may make any such appointment effective as of the date on which the officer or employee enters upon duty.

SEC. 7. There is hereby established in the Public Health Service a Nurse Corps, which shall consist of a superintendent and such other nurses as the Secretary of the Treasury may deem necessary. The members of the Nurse Corps shall be entitled to receive the same pay and allowances as nurses of the Army.

SEC. 8. Hereafter the Advisory Board for the Hygienic Laboratory shall be known as the Na-

tional Advisory Health Council, and the Surgeon General of the Public Health Service, with the approval of the Secretary of the Treasury, is authorized to appoint, from representatives of the public health profession, five additional members of such council. The terms of service, compensation, and allowances of such additional members shall be the same as the other members of such council not in the regular employment of the Government, except that the terms of service of the members first appointed shall be so arranged that the terms of not more than two members shall expire next year. Such council, in addition to its other functions, shall advise the Surgeon General of the Public Health Service in respect of public health activities.

SEC. 9. As used in this Act, the term "executive agency" means any board, bureau, division, service, or office in the executive branch of the Government.

DIPHTHERIA IN ARIZONA AND NEW MEXICO

During this year there has been a recurrence of a virulent type of diphtheria. As a result, the incidence of the disease is much greater in Arizona and New Mexico than for several years past; and this in spite of a fairly wide-spread use of toxin-antitoxin immunization. Several physicians have reported the occurrence of diphtheria in children supposed to be immune, or who had been given the injections of toxin-antitoxin last year.

At intervals during the past year, warnings have appeared in the medical press, to the effect that we were due for a recurrence of a virulent type of diphtheria this year, and that the disease would, no doubt, occur in some supposedly immune individuals. This is due to the fact that immunity to diphtheria is not absolutely fixed, but varies in different individuals and in the same individual at different periods. Thus exposure to a very virulent type of organism at a time when the immunity defenses are weak, can very conceivably result in infection.

These disappointing occurrences should not be taken as an argument against the use of toxin-antitoxin, because the need for this is even greater now than ever before. It is gratifying to notice that the use of this protection to children is coming into general use over Arizona and New Mexico. From Snowflake, Ariz., the news item comes that the Schick test is being given to all those who were given toxin-antitoxin last year, and immunization to those who have not previously been inoculated. Dr. Platt reports that, with a few exceptions, the children who were given the preventive inoculations in Graham County have remained free from diphtheria; he is planning to retest the entire group who were inoculated last year. Dr. Dostal of Jerome is conducting a free diphtheria clinic in Jerome, test-

ing and inoculating without charge all children who apply. Dr. Durfee in Cochise County is urging the general inoculation of all school children in that county. In New Mexico, where toxin-antitoxin has been used fairly generally, the increase in the incidence of diphtheria has been almost entirely among the young children entering school this year, and who have not yet been inoculated.

FIRST VACCINATIONS AGAINST SMALL-POX IN THE UNITED STATES

Those who know the history of the southwest take pride in the unique place which New Mexico occupies in the historical leadership among the states. It is often astonishing to a native of New England to hear that Santa Fe was a thriving settlement of white people sixty years before the Pilgrims landed at Plymouth, and that this city was founded almost coincidentally with St. Augustine, Fla., the first settlement in the New World.

It has been recently discovered, by search through the archives of New Mexico that, within five years of the discovery by Jenner of vaccination in 1799, it was being generally practiced through the province of which New Mexico was then a part. The story told in the Santa Fe New Mexican of December 12, by Lansing B. Bloom is so interesting that it is produced herewith verbatim:

The discovery of vaccination against smallpox is generally credited to Dr. Edward Jenner and first came into medical practice in the year 1799. It is remarkable that our New Mexico archives reveal the fact that the use of vaccine was introduced into this province of New Spain in 1804, only five years after its first general use began in England, and it may be of interest to trace this strange migration in medical history and review the evidence of the early practice of vaccination in New Mexico.

The most striking fact connected with the extension of vaccination over the world was the sending out by the court of Spain of an expedition in the year 1803. This expedition was sent out for the purpose of diffusing the pus of cow-pox, or vaccine, through all the Spanish possessions in the old and new worlds, and it returned in three years, having circumnavigated the globe and having succeeded beyond its utmost expectations. Perhaps we may consider this event as one of the last evidences of greatness in the old Spanish realm previous to the wars of independence which broke out in Spain and in her colonies in 1810.

It would seem beyond serious question that the knowledge and practice of vaccination reached Chihuahua from Mexico City as one result of the above expedition, though the evidence of this does not appear in the New Mexico archives. But from Chihuahua northwards the story may be pieced together from some 30 documents. The first is a communication from Brigadier Nemesia Salcedo, general commandant of the internal provinces to Gov. Fernando Chacon at Santa Fe, as follows:

"The discovery of the inoculation of cow-pox having been found in Spain and in nearly all Europe, to be the most efficacious preservative from common smallpox. I have managed by means of the most active and effective measures to have it established in this villa.

"Already it has been propagated to some towns and military posts, and to the end that the inhabitants of that province may not lack such a precious discovery, I advise your honor to see that the Surgeon Don Christoval Larranga be included in the *cordón* (caravan) at the end of the present year, bringing in his company six or eight children, sons of the troop or residents, so that in them the fluid may be infused, inoculating them from arm to arm when they shall return from here, since this is the surest method of transmitting it."

The arrangement indicated in the above papers was carried out that winter, as appears from the next paper in which we see the surgeon with a number of inoculated children returning from Chihuahua and administering the transfusion successively at "el Paraje de Valverde." (then the first settlement north of Paso del Norte), Sevilleta, and Sabinal.

Inquiry shows that even today the earliest form of inoculation, from one person to another, still persists in Mexican plazas and Indian pueblos. As an instance, in the fall of 1923, the health officer of Santa Fe county performed a number of vaccinations in the little plaza called Rio en Medio. Later when the county nurse visited the place to see how these cases were progressing she found that the people there had inoculated everybody from those first treated, using in the operation needles, pins or any sharp instrument available.

Such procedure today seems obsolete and almost absurd, though it is reported to persist also in other parts of the United States. But 120 years ago this method was the latest thing in the practice of medicine, and its early introduction into such an isolated province as New Mexico shows how astonishingly efficient the machinery of the old Spanish realm might be.

A CORRECTION

In our October issue, a list of the Class A hospitals in Arizona was published, and from this list there was omitted the name of the U. S. Veterans Bureau Hospital No. 50, at Whipple Barracks, Ariz. This hospital should have been included, and we regret the omission.

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Los Angeles, Calif.

PROCEEDINGS OF THE THIRTEENTH ANNUAL MEETING

(Continued from page 557)

whose subject was "Genito-Urinary Tuberculosis from a Surgical Standpoint." Dr. Hinman's paper will appear in full in an early number of *SOUTHWESTERN MEDICINE*.

At eight o'clock, a public lecture was given at the Texas Grand Theater, by Dr. William H. Park, Chief of the Bureau of Laboratories, New York City, on "Pasteurization and the Tuberculous School Child."

Dr. Waite announced that the Association desired to give the general public as much benefit from this convention as possible, and that Mayor Walker of New York had sent Dr. Park, with his compliments, to tell us how public health is safeguarded in that city.

Mayor R. E. Thomason, of El Paso, introduced Dr. Park, who spoke for an hour and a half, giving an interesting history of the developments in tuberculosis study and the relation of bovine tuberculosis to human infection. He also discussed the advantages of pasteurization. Dr. Park digressed from his general subject to give some timely information and advice on smallpox, diphtheria, scarlet fever, and measles.

Thursday, November 3rd.

Clinics were held at the hospitals, as follows:

Dr. Carl A. Hedblom at the Masonic Hospital, on thoracoplasty.

Dr. Frank Hinman at Hotel Dieu on genito-urinary diagnosis.

Dr. Harry A. Crossen, at the City-County Hospital on gynecologic diagnosis.

Dr. Francis M. Pottenger at Hotel Dieu on diseases of the lungs (See last month's journal).

At the general Congress, in the Crystal Room, Hotel Hussman, the first speaker was Dr. James T. Case, of Battle Creek, Mich., professor of Roentgenology at Northwestern University, spoke on the "X-ray Aspects of Malignancy of the Gastro-Intestinal Tract." This talk was profusely illustrated with lantern slides, and covered the subject of cancer of the colon very masterfully.

The second speaker of the morning was Dr. Carl A. Hedblom, Professor of Surgery at the University of Illinois, Chicago, who spoke on "Non-Tuberculous Pulmonary Conditions, Especially Cancer." Either the completed paper or a summary of this address will be given in a future issue of this journal.

At the clinical luncheon, at twelve o'clock, Dr. Rogers introduced Dr. W. Colby Rucker,

of the United States Public Health Service. Dr. Rucker has been identified with the Public Health Service since 1902. His work in connection with the suppression of bubonic plague in San Francisco and later in New Orleans was outstanding. He was also in charge of the control measures instituted by the Public Health Service in controlling the epidemic of infantile paralysis in 1916. He spoke at this luncheon on scarlet fever, in part as follows:

"The work which has been done on scarlet fever in recent years has opened up very greatly the entire subject and has placed us in possession of some very accurate epidemiological weapons to use against the disease. Before the Dicks had done their work, however, there were certain epidemiological facts which were well known. In the first few months of life the child has an immunity to scarlet fever; this is maternal immunity, and with the passing of this the incidence curve is still low because the child is not exposed to people who have the disease. As soon as the child reaches the kindergarten age, there is a very sharp rise in the incidence curve, which peaks very rapidly until it reaches its maximum about the tenth or twelfth year. It then runs along and is an almost flat curve until the fifteenth or sixteenth year, when it begins to curve off. By the time the thirtieth year has been reached, we are back again almost on the base line.

There are only two ways in which a person gets an immunity to a disease; by artificial immunization or by having had the disease in either severe or mild form. Just looking at the curve at this time will tell you at once that this is a very common disease and that all of us at one time or another have had it. This brings us to the second epidemiological point and that is that in the great majority of cases there is no scarlet and no rash. A great bulk of the cases are manifested solely by a very severe angina and a febrile reaction. The child is sick for a shorter or longer period of time and then recovers. The probabilities are that there are no scarlet fever carriers, if we exclude those people who have running ears, or running wounds of any sort following the disease. These persons are carriers, but it is very uncommon for this to occur in the disease and therefore we may say that there is usually no such thing as a scarlet fever carrier. It is disseminated by the secretions in the early hours of the disease while there is still an angina. All this was reasoned out before the Dicks did their work, but they corroborated and substantiated it.

We know one of the great harms that come from scarlet fever is nephritis; it is probably more responsible for nephritis than any other single condition. If, by the control of scarlet fever, we are able to reduce our nephritis incidence rate, that is a very important matter. The work the Dicks have done has been most illuminating. They have announced that the disease is associated with a highly specialized streptococcus belonging to the hemolytic group. This organism is found in the throats of persons having the disease. It has been cultured and its introduction into the bodies of persons not immune will produce the disease. The toxin of this organism will produce the scarlet fever rash, but will not immunize the person against the disease—a most important epidemiological point. If you inject a person with the toxin, you will produce a typical scarlet fever rash. In other words, there is no relation whatsoever between this rash and immunization and furthermore

we may say that the scales produced by this rash are non-infectious and play no part in the spread of scarlet fever. A most important point because all of us have heard those old fallacies about unpacking Mary's doll and thereby giving little Susie scarlet fever and little Susie dying, and the one about the celebrated doctor who got the scales on his whiskers and spread the disease throughout the whole community. There is nothing in these stories—they make very good fiction, but they are not true.

(To be concluded next month)

SANTA CRUZ COUNTY (Ariz.) MEDICAL SOCIETY of Nogales.

At a meeting of this Society held on December 3rd, Dr. A. H. Noon, one of the pioneer physicians of Arizona, who has not been in active practice for many years, evidenced his interest in medical affairs by accepting the presidency of the Santa Cruz County Medical Society for the coming year. Dr. T. B. Fitts, Nogales, was made vice-president. Dr. W. F. Chenoweth was elected secretary and Dr. B. M. Richardson was made treasurer. Drs. A. L. Gustetter, V. A. Smelker and W. F. Chenoweth were made members of the Board of Censors.

BERNALILLO COUNTY (N.M.) MEDICAL SOCIETY

The Bernalillo County Medical Society held their annual meeting at the Chamber of Commerce, on Wednesday evening, December 7th. The following officers were elected for the year 1928:

Dr. P. G. Cornish, Jr., president.

Dr. L. F. Elliott, first vice-president.

Dr. W. H. Woolston, second vice-president.

Dr. L. B. Cohenour, secretary-treasurer.

Drs. E. E. Royer and Carl Mulky, delegates to the New Mexico Medical Society.

Dr. C. C. Davis, member board of censors.

The society holds monthly meetings.

COCHISE COUNTY MEDICAL SOCIETY (Arizona)

At the annual meeting of the Cochise County Medical Society, held at Douglas, Ariz., on December 7th, the following officers were elected for the ensuing year:

President, Dr. G. Fitzgerald, Bisbee.

Vice-President, Dr. Z. Causey, Douglas.

Secretary and Treasurer, Dr. H. French Bistee.

Member Board of Censors, Dr. A. E. Cruthirds, Bisbee.

Delegates to the State Association, Drs. John Cook of Douglas, and G. A. Bridge of Bisbee; Alternates are Drs. E. W. Adamson of Douglas and G. Fitzgerald of Bisbee.

Dr. H. M. Helm of the Calumet Hospital presented the paper of the evening.

YUMA COUNTY MEDICAL SOCIETY (Arizona)

The Yuma County Medical Society, at a recent meeting, elected the following officers for the ensuing year:

President, Dr. H. A. Reese.

Vice-President, Dr. J. D. Forrest.

Secretary, Dr. W. C. Cain.

Censors, Drs. P. Seiberts and R. R. Knotts.

PERSONALS AND NEWS

ORTHODONTISTS MEETING IN EL PASO

El Paso entertained another interstate gathering early in December, when the Southwestern Society of Orthodontists met there, with headquarters at the Hotel Paso del Norte. Dr. W. T. Chapman of El Paso was president of the Society. Among

the speakers on the program were Dr. R. B. Homen and Dr. W. L. Brown, of El Paso.

HEALTH EXAMINATION WORK IN BISBEE

A very comprehensive program of health examinations for young children is being carried through the cooperative efforts of the local Red Cross, the Antituberculosis Association, the Health Center, aided by the medical staffs of the Copper Queen and the Calumet and Arizona hospitals. The children are being enrolled through the Health Center, and then sent to the Central School building, where examinations are held every Tuesday between two and four o'clock. Health conferences for children and their parents are held twice a week. This work is for children of pre-school age, designed to detect any physical defects before the children enter school.

DR. JOHN C. BURTON, of Hermosillo, Sonora, Mexico, was a visitor in Nogales, Ariz., for several days early in December. Dr. Burton operates a private hospital at Hermosillo.

DR. J. W. BAZELL, of Winslow, Ariz., has been appointed City Health Officer to fill the vacancy created by the resignation of Dr. John R. Walls.

DR. N. C. BLEDSOE, of Bisbee, Ariz., is demonstrating his versatility in realms outside of the practice of medicine. He recently assisted in conferring the thirty-third degree of Masonry upon a candidate in Tucson, being himself one of nine Masons in Arizona who hold this degree. In the same paper from which this item of news was culled appears the announcement that Dr. Bledsoe had been elected to his fifth term as chairman of the Cochise Council of the Boy Scouts of America.

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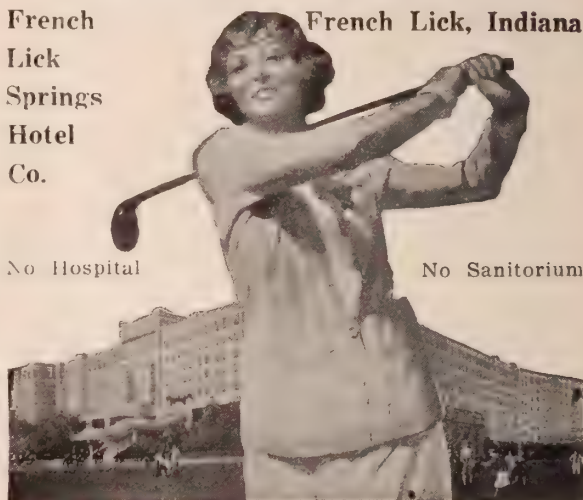
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DR. T. B. FITTS, of Nogales, Ariz., spent several days in Guaymas, Sonora, the latter part of November.

DR. W. F. CHENOWETH, of Nogales, Ariz., made a business trip to Hermosillo, Sonora, the latter part of November.

DR. T. O. BUNDY, of Marlin, Texas, a member of the Buie Clinic at Marlin Hot Springs, was a visitor in Clifton, Ariz., early in December. He came to inspect the possibilities of the hot springs near Clifton, and was quite royally entertained by the Clifton Commercial Club.

DR. HARRLY L. SCHORNICK, osteopath, of Tempe, Ariz., has been appointed a member of the Board of Medical Examiners, taking the place of Dr. Harriet D. Johnson, Winslow, who has moved from the state.

FREE DIPHTHERIA CLINIC AT JEROME, ARIZ.

A clinic established by Dr. Robert Dostal, city health officer of Jerome, Ariz., at the United Verde Hospital, furnishes free examination and tests as to susceptibility to diphtheria. The clinic operates on Saturday afternoon.

DR. AND MRS. HUGO HELM, of Douglas, after attending the Clinical Congress in El Paso, early in November, took a week's trip through southern New Mexico and the Texas panhandle, visiting the famous Carlsbad Caverns near Carlsbad, N. M.

The ARIZONA STATE BOARD OF HEALTH is conducting a program under the Sheppard-Towner provisions of the Child Hygiene Division, in Tombstone during December. Mrs. Mary Kelleher, R.N., in charge of this work.

DR. JOHN R. WALLS, of Winslow, Ariz., has

tendered his resignation as City Health Officer of that town. In his signed statement transmitting his resignation, he stated that he was unable to secure the co-operation of the city officials in an effective health program.

DR. JOHN E. BACON, of Miami, Ariz., and family spent several days on the coast during the latter part of November.

DR. A. C. ROUNSEVILLE, of Williams, Ariz., visited Los Angeles the latter part of November, seeking advice about an injury to his hand suffered in the early part of the year.

The COCHISE COUNTY MEDICAL SOCIETY held a dinner meeting at the Warren District Country Club at Bisbee, Ariz., on November 19th. The guest of honor was Dr. Ernest Clyde Fishbaugh of Los Angeles, who gave an illustrated address following the meeting.

DR. G. B. MADSEN, of Globe, Ariz., formerly on the Old Dominion Hospital staff, has resigned that position, and moved to Tucson where he will be associated with the Arizona Desert Sanitarium.

DR. E. E. SWEENEY, of Ray, Ariz., has accepted a position on the Old Dominion Hospital staff at Globe and moved to the latter city.

DR. R. D. KENNEDY, of Globe, Ariz., addressed the Globe Rotary Club on December 7th, on "Recent Advances in Medicine and Surgery."

DR. E. L. CHRISTENSEN, of Miami, will hold a number of free clinics for the school children, for the purpose of examining the eyes. This work will begin shortly after the first of January.

DR. ARTHUR C. JORDAN, formerly of Peabody,

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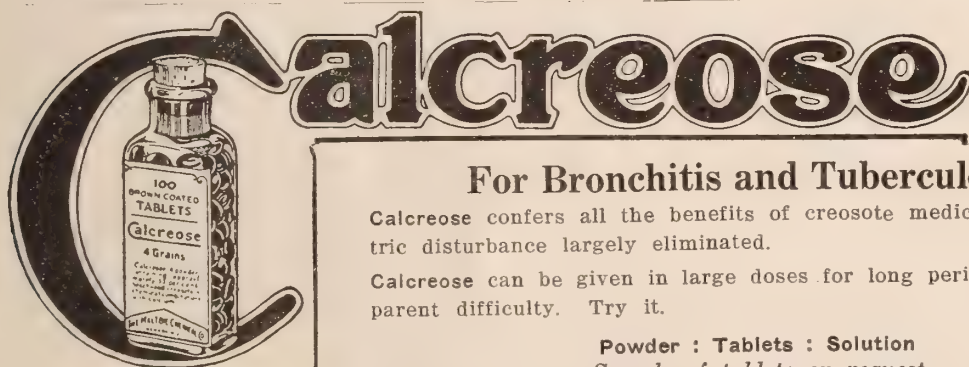
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Mass., is now associated with DR. JOHN J. McLOONE, of Phoenix, in the practice of eye, ear, nose and throat specialty. Dr. Jordan is a graduate of Harvard University Medical School class of 1925.

DR. EARL O. G. SCHMITT, of the Mayo Clinic, Rochester, Minn., is located at Castle Hot Springs, Ariz., for the winter. Dr. Schmitt is a graduate of the University of Minnesota Medical School, class of 1923, and was an associate in the department of internal medicine at the Mayo Clinic.

DR. CHARLES O. DONALDSON, one of the leading practitioners of roentgenology in the United States, formerly of Minneapolis, has located in Chandler, Ariz. Dr. Donaldson, after practicing his specialty for twenty years, finds it necessary to withdraw from this field for a time, and will engage in general practice in Chandler. Dr. Donaldson's contact with medical practice has not been circumscribed and he will no doubt enjoy taking up general work again, and he will be a welcome addition to the medical fraternity of Maricopa County.

DR. J. A. MYERS, of Minneapolis, Minn., specialist in tuberculosis and chest diseases, was a visitor in Phoenix for a week or two during December. Dr. Myers is Assistant Professor of Preventive Medicine and Public Health in the University of Minnesota Medical School.

DR. MARY LAWSON NEFF, of Los Angeles, spent a week in Phoenix during the early part of December, holding consultations in her specialty of neurology and psychiatry.

DR. HARLAN P. MILLS, of the Pathological Laboratory, Phoenix, returned about December 10th from the Radiological Society of North America, whose annual meeting was held in New Orleans. Dr. Mills read a paper on Cholecystography, with report of 700 examinations.

DR. EUCLID C. WILLS, of San Diego, Calif., was a recent visitor in Phoenix, Ariz. Dr. Wills was at one time located at Yuma; later he went into Mexico. He has now retired from practice and is in business in San Diego.

DR. R. D. KENNEDY, of Globe, was elected a member of the Board of Governors of the American College of Surgeons, at their meeting in Detroit, in October.

DRS. VICKERS AND MORAN, of Deming, N. M., have installed radiographic equipment in their offices in the Mahoney Building, selecting the Victor model.

NURSES ON TWELVE HOUR BASIS

Beginning on November 19th, the nurses who are members of the Arizona State Nurses' Association went on a twelve-hour basis in all hospitals and sanatoriums. In institutions, physicians may have nursing service either during the day or night, but if twenty-four private nursing service is desired, two nurses must be employed. Sleeping facilities will not longer be provided in the hospitals for private nurses. It is claimed by the hospitals that it will be more economical for them to provide additional graduate nurse service for night duty, under the new plan, than to provide sleeping accommodations for nurses on twenty-four hour duty.

It is claimed that this arrangement will be more economical for the patient. The arrangement does not apply to nursing service in private homes, where the old provisions are still permissible.

DR. G. H. FITZGERALD, of Bisbee, Ariz., in a talk before the Rotary Club of that city on November 10th, gave a resume of the cancer situation as reported by the American Society for the Control of Cancer, this talk being reported at length in the Bisbee Review of Nov. 11th.

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SOCIAL SERVICE CLINIC
(Phoenix, Ariz.)

The board of directors of the Social Service Center of Phoenix, Ariz., at its meeting on Nov. 16th, passed a resolution of thanks to the MARI-COPA COUNTY MEDICAL SOCIETY for the interest taken by the doctors in the clinic work of the Center. The president of the Society is an ex-officio member of this board. During the ten months of the year ending October 31, 5,440 treatments were given at this clinic, as follows:- Tuberculosis, 922; mercurosal, 354; salvarsan, 387; hospitalized patients (1,598 days), 93; tonsillectomies, 86; adenoidectomies, 64; dental patients, 264; laboratory examinations, 501; x-ray examinations, 71; other operations, 4. Clinics are conducted on Monday, Tuesday, Wednesday and Thursday in the following departments: tuberculosis; general medicine; eye, ear, nose and throat; children's diseases; genito-urinary; obstetrics; dentistry; emergency.

DR. JOHN I. MITCHELL, of Salem, Ind., is spending the winter in Phoenix, in the interest of the health of a daughter.

DR. D. L. FLANARY, of St. Louis, Mo., upon the appearance of the first snow in that city, closed his office and will spend the next five months in the Salt River Valley, leaving the citizens of the Mississippi Valley metropolis to seek other advice about their nose and throat troubles.

DR. H. P. COLLINS, formerly a practitioner of Phoenix, has returned to that city and is established at his home at 743 E. McDowell for the time. He expects, alter, to find office quarters. Dr. Collins, for the past fifteen years has been practicing in Mexico City.

DR. J. M. GREER, of Mesa, Ariz., has been appointed a member of the Medical Examining Board

of Arizona, to fill the vacancy created by the death of Dr. A. G. Schnabel of Tucson.

DR. CHARLES L. LOWMAN, of Los Angeles, spoke to the staff of St. Joseph's Hospital, Phoenix, Ariz., on November 22nd, on the treatment of poliomyelitis. Dr. Lowman's work is limited to the treatment of diseases and deformities of bones and joints. He is the founder of the Orthopedic Hospital-School of Los Angeles.

At noon of the day of his visit to Phoenix, a luncheon was tendered him at the Arizona Club, at which about a dozen of his friends and admirers were favored by an informal discussion of lower back pain.

ST. JOSEPH'S HOSPITAL STAFF MEETINGS
(Phoenix, Ariz.)

The first meeting after the summer vacation was held on November 14th, with a total of thirty-one present. Dr. R. W. Craig, who had been asked by the Advisory Committee to preside at this meeting was elected permanent chairman to serve out the unexpired term of Dr. Willard Smith, resigned.

The minutes of the May meeting were read and approved.

The program which had been prepared by Dr. Fred Holmes, of the Executive Committee, consisted of a critical review of five case records of patients who had recently died in the hospital, all being discussed by staff members other than the doctors treating the patients.

Dr. H. B. GUDGEL discussed Case No. 11714, a case of typhoid fever with hemorrhage and death. The advisability of blood transfusion was brought up and discussed at some length, chiefly by the men who had heard the lectures of Dr. W. W. Duke at the recent meeting in El Paso. Typhoid vaccine was also discussed.

DR. LOUIS DYSART discussed case 11935, diag-



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nosed as traumatic appendicitis, followed by liver abscess and death. Dr. Wylie stated, in general discussion, that he does not think a blow several inches away from the appendix area could be regarded as a cause of appendicitis; he thought it was a coincidence only.

DR. J. M. GREER discussed case 12096, appendicitis, postoperative pneumonia, pulmonary hemorrhage, death. The question of pneumonia as against tuberculosis was discussed.

DR. H. M. PURCELL discussed case 11822, acute cerebral meningitis, urinary retention and death.

DR. CHAS. S. VIVIAN discussed case 11813, popilloma of the bladder, with operation, secondary hemorrhage and death. He thought electrocoagulation might be better than surgical excision of such a growth.

DR. A. C. KINGSLEY, as a special feature, presented case 11238, a spinal cord tumor, location of which was shown by lipiodol injection into the canal, and tumor was operated upon by Dr. Vivian.

At the December 12th meeting of the staff, the program was on the subject of fractures of the head, thorax and spine, under the direction of Dr. Bannister, of the Executive Committee.

Communication from the College of Surgeons was read, in which they made suggestions with regard to staff meetings and other work in the hospital. This letter had previously come before the Advisory Committee and been thoroughly discussed by them.

A summary of the work in the hospital for November was presented. This was prepared by the Records Department.

DR. A. M. TUTHILL discussed several cases of spine fracture, criticizing the records kept, with respect to the history of the injury, the progress in the hospital, the final examinations and the follow-up.

DR. R. J. STROUD summarized the records on the head injuries in the hospital for the past year, with a critical review of the proper treatment for head injuries, designating the proper class for each of the cases treated in the hospital.

DR. S. I. BLOOMHARDT reviewed the rib injuries treated in the hospital, with comments upon the treatment of various such injuries.

Dr. W. W. WATKINS showed x-ray illustrations of several of the cases discussed and criticized and the method of handling seriously injured patients when they are sent for x-ray examination or otherwise handled in the hospital. He suggested that some definite technic be worked out for handling such patients.

This being the annual meeting for the election of officers for the ensuing year, the following were elected:

Chairman of Staff, Dr. E. Payne Palmer.

Secretary of Staff, Dr. Dudley Fournier.

Two-year members of Advisory Committee, Drs. J. M. Greer, Geo. M. Brockway and Fred Holmes.

STAFF MEETING (October)

(Continued from last month)
CASE III.

Case 1636, brain hemorrhage, was presented by DR. SHELLEY, as follows: Male, 54 years of age; native of California and of Spanish descent; mining engineer by occupation. Family history not obtainable, but his mother is living and is past 80 years of age. Has always been in good health until present illness. His friend says he has worried considerably over finances. There is no history of mental or nervous diseases in the family. On Aug. 16, 1927, he presented himself because of aphasia. At this time he could speak fairly well

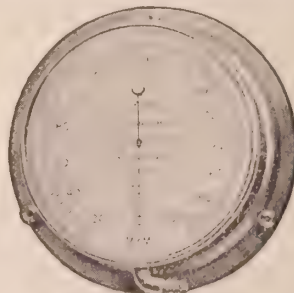


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but now and then could not think of a word. It might be the most simple or insignificant word that he lost. Examination at this time revealed that he felt as well physically as usual. No pains nor headache. Urinalysis was negative. Blood pressure 110 over 80. On other occasions during the next few weeks systolic pressure was as low as 90. Blood Wassermann was negative. Tonsils and nose negative. Teeth were filthy, with bad breath and gums unhealthy. I sent him to a dentist for x-ray. Dentist found some apical abscesses, extracted the teeth that were affected or suspicious and cleaned the others. The reflexes were practically normal. The pupils were normal in size and regular and reacted to light. I wanted him to have a spinal puncture but he would not consent. He was on treatment with K. I. but his aphasia became progressively worse until Oct. 1st; there were signs of paralysis in the right arm and hand. At this time he still had a fair grip in the hand and could walk, but the right leg did not feel normal, and signs of paralysis could be noted in his face. By Oct. 3rd. his right hand was moved with difficulty and only slightly; could not walk and there was involuntary urination, and no bowel actions. On Oct. 6th he was admitted to the hospital. At this time he was unable to speak at all, but seemed to know everything that was said to him. A spinal puncture was made and there was no undue pressure. The fluid was clear with only 13 cells per cubic mm. and it was Wassermann negative. Blood hemoglobin, 90 per cent; leucocytes, 8,360; monos., 22 per cent; and polys., 78

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per cent. Dr. Hamer made the following physical examination:

Fairly well developed, somewhat emaciated. The patient is a white man, foreigner, who lies somewhat in a stupor and can be aroused only with difficulty. The head is of normal size and conformation. Ears: canals patent and normal. Drums show moderate thickening; the left is opaque in its superior portion. Eyes: dull expression; lids are partially closed but are elevated equally. Eyes show a slow lateral nystagmus. No strabismus, ptosis, exophthalmus. Pupils are average in size, equal; the left is irregular; both react to light sluggishly, and patient does not cooperate to test for accommodation. Nose: septum straight, no obstructions or perforations. Mouth: teeth in rather poor condition. Tongue coated white, and protruded to the right. Throat clean. Face: mouth droops at its right angle, and right cheek lags when patient smiles. Neck: symmetrical, thin. No glandular or thyroid enlargement. Chest: symmetrical, right chest somewhat slower in expanding than left; resonant throughout; no areas of increased pitch, or density; bronchovesicular breath sounds with a few coarse, moist rales heard at both bases. Heart borders within normal limits: no murmurs. Sounds are quite soft in quality, faintly heard, and not accentuated. Aorta: no evidence of enlargement or dilatation. Abdomen: tones of right rectus less than left; abdomen flat, no masses or fluid; viscera not enlarged to palpation or percussion. Genitalia: no abnormalities; no penile eruptions, scars, or discharge. Extremities: no edema nor scars; nails are pale. Neuromuscular reflexes; biceps, patellar, and achilles, slightly more active on left than right.

The right upper extremity is the seat of a flaccid paralysis. No movement can be executed actively.

The right lower extremity is paretic; patient can flex knees slightly, also extend and flex toes slightly. No Babinski nor clonus obtained on either side. There is little if any atrophy of paretic muscles. Patient responds to normal sensory stimulations. The patient cannot respond to questions involving speech, altho at times an effort is made. There is a better recognition of things said than of words spoken. Patient however, does not cooperate in tests involving words seen nor heard; nor does he write things suggested.

The treatment was potassium iodid, bismuth, salicylate and mercurous. The first few days at the hospital, he seemed to improve slightly in mentality and in the matter of taking food. He even tried to talk some, although he could not be understood. Paralysis, on the whole, was slowly progressive and there were days when he was practically comatose. On the 16th, he lapsed into unconsciousness, became pulseless with heart sounds very indistinct and respiration gradually slower, and he died at 8:30 in the evening of the 16th.

With the persistent low blood pressure and the absence of any apparent arteriosclerosis together with the very gradual progress of the trouble, I think the exact nature of the lesion might be in doubt. The cause of death on the death certificate was given as endarteritis of the middle meningeal artery; hemiplegia.

DR. KINGSLEY said he had seen this case the day before death. He said that the man was unable to write or to speak. His speech soon became a jargon because of the type of aphasia. The lesions must have been above the pons. The conclusions were that there was a subcortical lesion in Broca's area in the third frontal convolution.

DR. VIVIAN asked whether mercurous and potassium iodid were administered at the same time.

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He said that it is printed upon the mercurosal box that this drug is incompatible with potassium iodid.

DR. SHELLEY replied that he believed that the two drugs had been administered simultaneously; he further stated that the case seemed to be one of hemorrhage; but the fact that the man had low blood pressure made the diagnosis perplexing.

CASE IV.

Case 114 was presented by DR. WATKINS as Dr. Vivian had been called out. This was a female 69 years of age. Something over a year ago she was sent to the laboratory for an x-ray examination of the shoulder, for suspected subacromial bursitis. At that time minor changes in the head of the humerus were found. Patient was brought back for second x-ray a month later. This showed definite changes suggesting sarcoma of the head of the humerus. She was taken to hospital and head of humerus was operated upon; it was cauterized and radium was implanted in the bone, as the tumor had proved to be a medullary growth. Dr. Watkins said he would not now do this, as more recent reports indicate that it is not best to put radium inside bone cavities.

The wound showed tendency to heal; she was given x-ray treatment to entire shoulder. Metastases however, began to develop. On March 30, after lipiodal injection, an x-ray of the shoulder showed a considerable amount of the opaque material surrounding head of humerus; there was evidence of bone destruction. On May 17, an x-ray indicated that there had been no definite advance. On July 14, the radiographs showed a marked involvement of the upper end of the humerus and a fracture $2\frac{1}{2}$ inches below articulation. The scap-

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ula also showed a reduction in density, probably indicating diffuse involvement. There was a very complete record of examination of this patient but nothing of particular interest is found except that already given.

DR. HAMER said that this patient was in the hospital on March 1, 1927, when he first came to the hospital. He said at that time there was no evidence of metastases. She had a very painful urethra; later she had a rectal hemorrhage; a cauliflower growth was found in the rectum; the urethral pain was very difficult to control; various agents were employed but cocaine gave about the only relief. She had marked gastro-intestinal disturbances and sometimes evidence of bowel obstruction. At times the nausea was so bad that she could scarcely take even water. It would indicate that metastases were general. No evidence was found of metastases in the lungs. There was considerable drainage from the sinuses about the shoulder and there was pain in the shoulder.

DR. RANDOLPH said that almost invariably the termination in these cases was by metastases in the lungs by means of the blood stream. He saw one case in San Francisco who had her foot amputated 11 years before for sarcoma and at that time had metastases in the lungs. The type of the cell was the same in each instance.

CASE V.

Case 1459, trichiniasis, was reported for Dr. Banister, by DR. HAMER. Dr. Hamer said that there is an incompatibility here—a Jewish woman with trichiniasis. About the middle of June, the patient noticed swelling of feet, ankles and legs; later, a rash appeared on legs, and bottoms of feet were hard, although not calloused. In July, patient noticed swelling of right arm; later, the left, and swelling of all the joints; a rash appeared on both arms. About four weeks ago, patient began having trouble with her stomach, aching and tenderness. Bowel movements not normal; alternating constipation and diarrhea. Some nausea and vomiting. She became restless, had frequent headaches, general malaise, and tired with the slightest exertion. Muscles of body seemed sore and tender. Has been having a temperature off and on during this illness, rising to 100. Since a tentative diagnosis of trichiniasis has been made, patient was questioned about having eaten pork, and states that she does not remember having ever eaten any and that she does not serve it in her home.

When a child, she had measles, mumps, scarlet fever, pertussis and pneumonia. No complications. Had nasal polypi removed last winter by Dr. McLoone; otherwise, no eye, ear, nose or throat

trouble. Respiratory system: has had asthma for the past three years; came to Arizona in October because of this, and it has improved since then. No history of any tuberculosis in family. Digestive system: never a heavy eater; no digestive trouble; bowels slightly constipated. Renal: negative with exception of more frequent urination during the present illness. No operations. Menstruation began at age of 14, regular, moderate flow, duration five days, no cramping. Slight leukorrheal discharge. Married three years; husband living and well; no children; no miscarriages.

Patient lies in bed in dorsal position, appearing anemic, acutely ill and legs flexed. Muscular system seems to be affected. Muscles of face not tender or firm. Those of forearm are somewhat

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firm, indurated, tight with swelling; movement of flexors of right forearm is painful. Abdominal muscles and lower thoracic extremely painful, especially on right side in upper quadrant; muscles of extremities (lower) feel slightly drawn and firm, but are not tender; neck muscles are slightly tender. Head and neck: no tenderness of face or scalp; ears are normal; drums clear, with no abnormalities. Eyes: expression dull, no deviations, hemorrhages, icterus or ptosis. Lids slightly swollen, right pupil irregular; both react to light and accommodation. Nose: septum irregular and elevated; no tumors. Mouth: teeth in good condition. Tongue coated, breath foul, throat clear. Several palpable lymph nodes on left side of neck. Voice husky. Chest: expansion fair on both sides; percussion slightly higher in pitch over left top; breath sounds clear, vesicular throughout; no rales heard. Heart and vessels have no enlargement nor displacement; sounds clear, rapid; no thrills; aortic sounds faint; no murmurs; pulse full, regular, equal, with dicrotism perceptible. Abdomen: tender throughout, especially on right; no enlargement of liver or spleen, to percussion or palpation; no fluid or masses; no rigidity except for a protective response upon palpation. Nails very pale. Reflexes normal throughout. No gross sensory changes. Impression: trichiniasis.

A section of muscle from the forearm was taken, and was examined fresh in glycerine, but failed to show any trichina or cellular changes. Blood culture was negative; leucocyte count around 10,000. Patient was discharged from the hospital for first time, after 25 days, and returned about three weeks later. She has since had a stormy course. She manifested a good deal of hysteria but the pain has unquestionably been severe. The abdomen has been distended and painful at various times. Gastro-intestinal examination with x-ray showed a normal pylorus and duodenal cap. Stomach emptied itself in normal time, and meal reached the colon at about the usual time. The appendix was irregular, filled and sharply curved but was not apparently tender. The eosinophil count has been high, at times as high as 30 per cent. During the past week or more the patient has been gradually failing.

On motion of the secretary and seconded by several of the men, Dr. Thomas was unanimously voted thanks and appreciation for his two years as president of the Staff. Dr. Randolph moved, and it was seconded by Dr. Greer, that vote of thanks be extended to the hospital for the excellent dinner. Carried.

There being no other business the president announced that the meeting adjourned.

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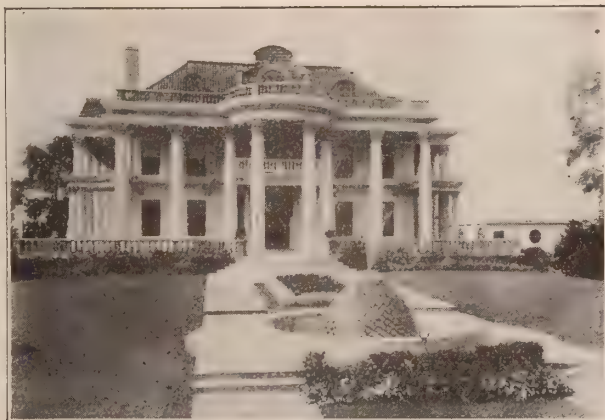
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